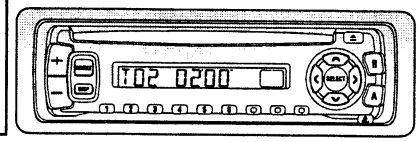
Pioneer

Service Manual

DEH-2130R/X1M/EW



ORDER NO.
CRT2434

HIGH POWER CD PLAYER WITH RDS TUNER

DEH-2130R X1M/EW

DEH-2100R X1M/EW

● This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech. Module	Remarks
CX-958	CRT2423	S8.1	CD Mech. Module:Circuit Description, Mech.Description, Disassembly

CONTENTS

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PIONEER CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

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K-ZZA. NOV. 1999

● CD Player Service Precautions

1. For pickup unit(CXX1285) handling, please refer to"Disassembly"(see page 48).
   During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the service pickup unit(see page 43).

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

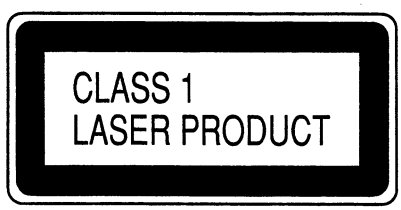
1. Safety Precautions for those who Service this Unit.

- **When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

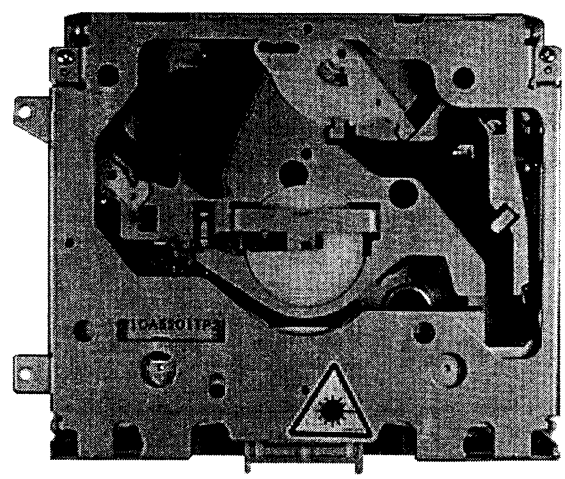
Caution:

1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.
2. During repair or tests, do not view laser beam for 10 seconds or longer.

2. A "CLASS 1 LASER PRODUCT" label is affixed to the bottom of the player.



3. The triangular label is attached to the mechanism unit frame.

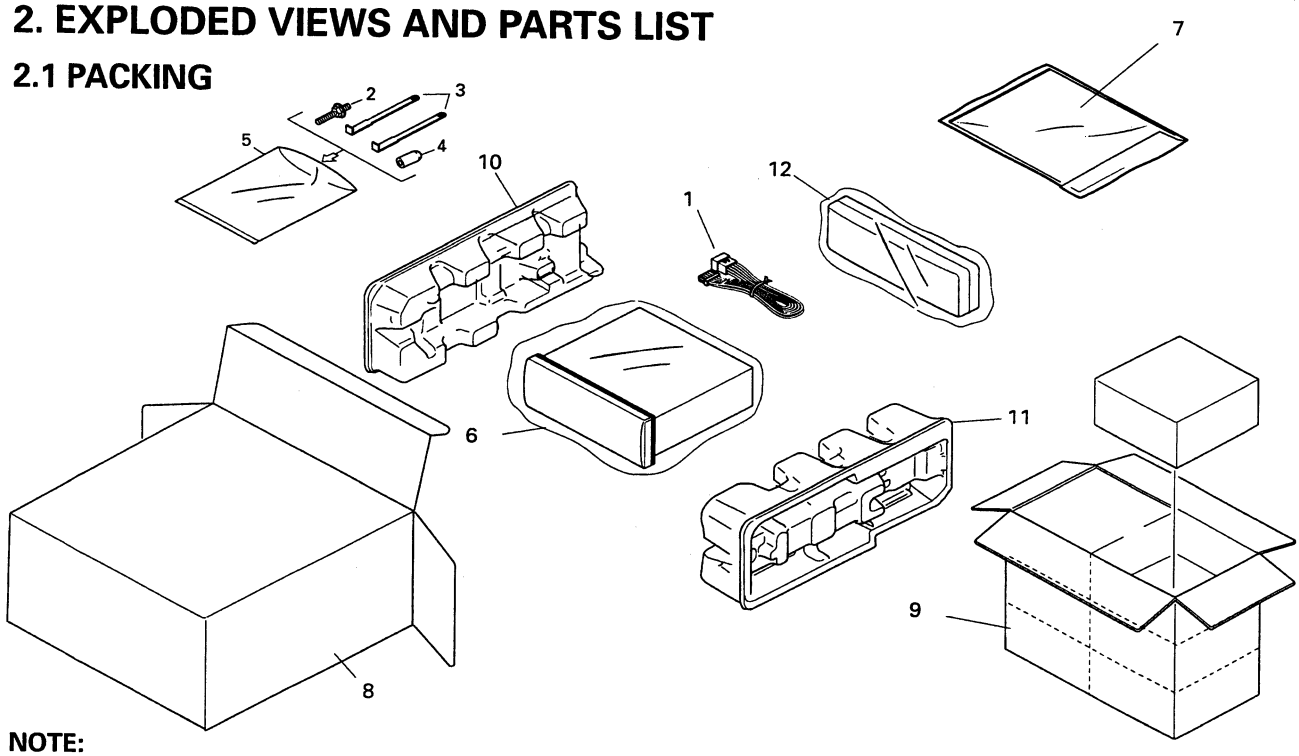


4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 800 nanometers

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING



NOTE:

- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.

(1) PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Cord Assy	CDE6123
	2	Screw	CBA1002
	3	Handle	CNC5395
	4	Bush	CNV3930
*	5	Polyethylene Bag	E36-615
	6	Polyethylene Bag	CEG-162
	7-1	Polyethylene Bag	CEG1116
	7-2	Owner's Manual	CRD3137
	7-3	Owner's Manual	CRD3138
	7-4	Installation Manual	CRD3139
*	7-5	Passport	CRY1013
*	7-6	Warranty Card	CRY1157
	8	Carton	See Contrast table(2)
	9	Contain Box	See Contrast table(2)
	10	Protector	CHP2243
	11	Protector	CHP2244
	12	Case Assy	CXB3520

(2) CONTRAST TABLE

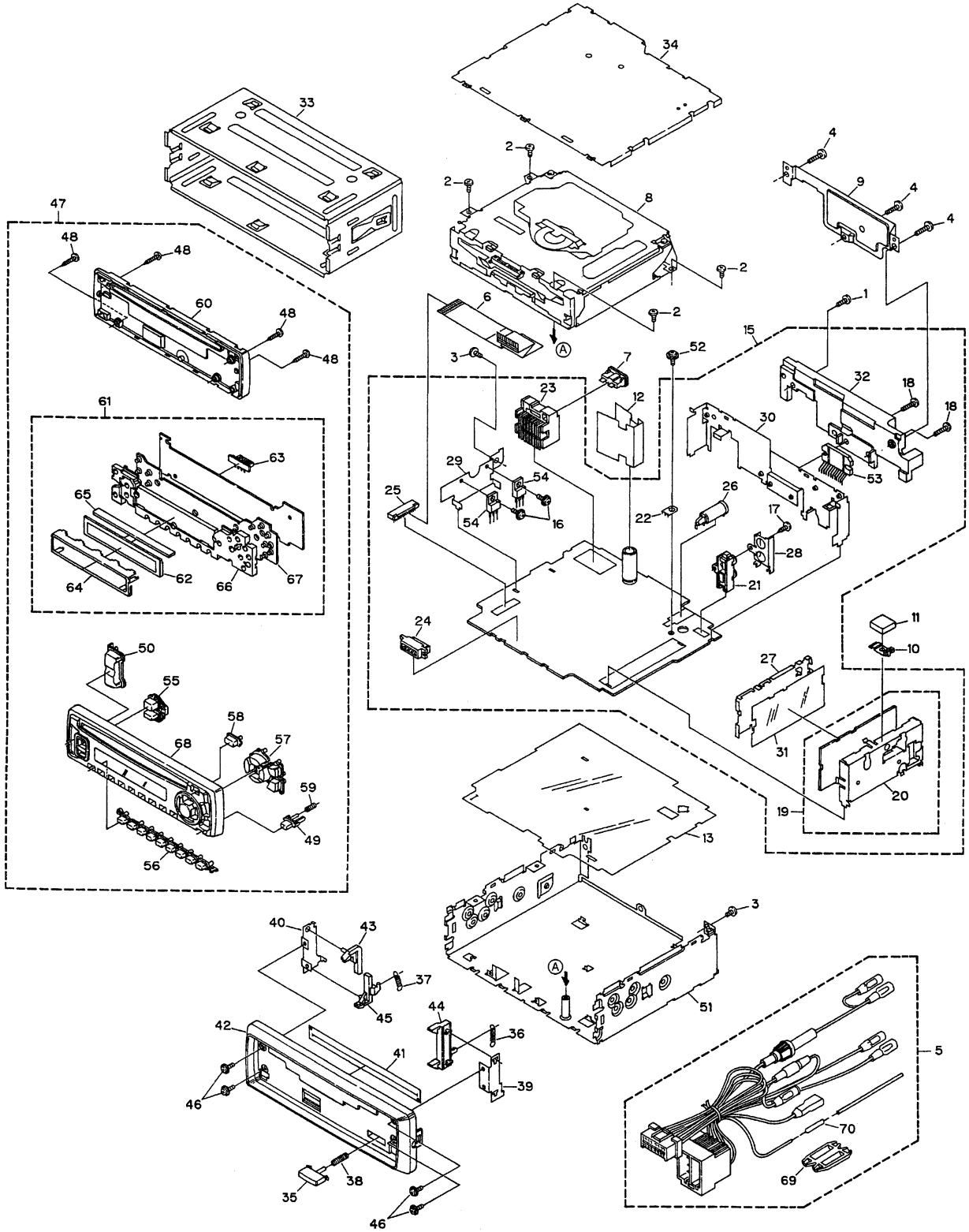
DEH-2130R/X1M/EW and DEH-2100R/X1M/EW are constructed the same except for the following:

Mark No.	Symbol and Description	Part No.	
		DEH-2130R/X1M/EW	DEH-2100R/X1M/EW
8	Carton	CHG3951	CHG3950
9	Contain Box	CHL3951	CHL3950

● Owner's Manual, Installation Manual

Model	Part No.	Language
DEH-2130R/X1M/EW DEH-2100R/X1M/EW	CRD3137	English, Spanish, German
	CRD3138	French, Italian, Dutch
	CRD3139	English, Spanish, German, French, Italian, Dutch

2.2 EXTERIOR


34
33
2
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48
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40
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46
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35
38
69

(1) EXTERIOR SECTION PARTS LIST

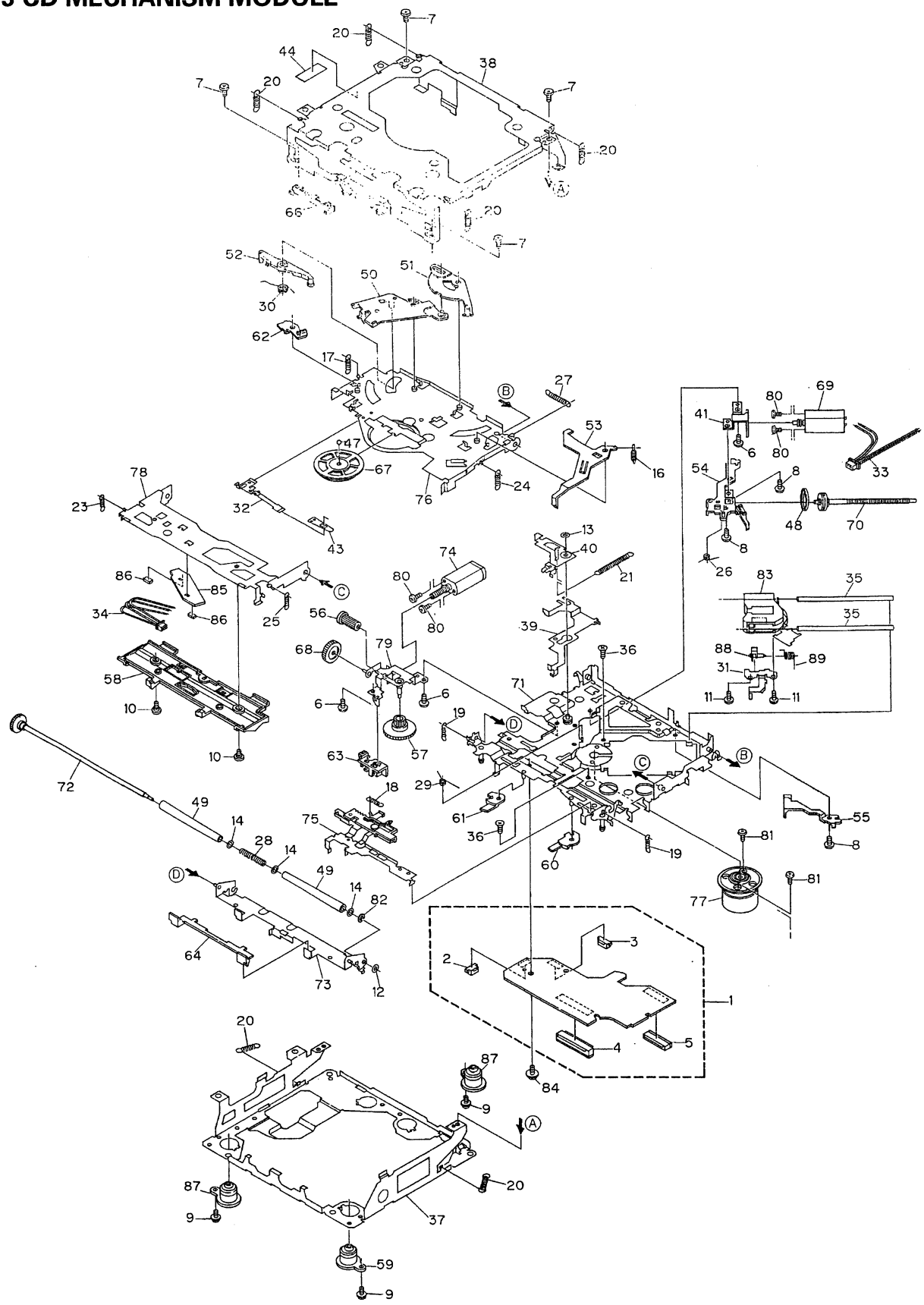
Mark No.	Description	Part No.
1	Screw	BMZ26P120FMC
2	Screw	BSZ26P060FMC
3	Screw	BSZ30P060FMC
4	Screw	BSZ30P120FMC
5	Cord Assy	CDE6123
6	Cable	CDE6160
7	Fuse(10A)	CEK1136
8	CD Mechanism Module(S8.1)	CXK5203
9	Cover	CNC8367
10	Holder	CNC8884
11	Spacer	CNM4913
12	Insulator	CNM6224
13	Insulator	CNM6386
14	•••••	
15	Tuner Amp Assy	CWM6764
16	Screw	ASZ26P080FMC
17	Screw	BPZ26P080FMC
18	Screw	BSZ26P160FMC
19	FM/AM Tuner Unit	CWE1500
20	Holder	CNC7532
21	Pin Jack(CN301)	CKB1041
22	Terminal(CN403)	CKF1059
23	Connector(CN901)	CKM1299
24	Connector(CN601)	CKS3581
25	Connector(CN605)	CKS3838
26	Antenna Jack(CN402)	CKX1056
27	Holder	CNC7533
28	Holder	CNC8041
29	Holder	CNC8043
30	Holder	CNC8588
31	Insulator	CNM5967
32	Heat Sink	CNR1506
33	Holder Unit	CXB2687
34	Case Unit	CXB4033
35	Button	CAC4836
36	Spring	CBH1835
37	Spring	CBH2208
38	Spring	CBH2367
39	Bracket	CNC6791
40	Holder	CNC8042
41	Cover	CNM6276
42	Panel	See Contrast table(2)
43	Arm	CNV4692
44	Arm	CNV4728
45	Arm	CNV5576
46	Screw	IMS20P030FZK
47	Detach Grille Assy	See Contrast table(2)
48	Screw	BPZ20P100FZK
49	Button(Detach)	See Contrast table(2)
50	Button(+, -)	See Contrast table(2)
51	Chassis Unit	See Contrast table(2)
52	Screw	ISS26P055FUC
53	IC(IC302)	TDA7384
54	Transistor(Q904, 981)	2SD2396
55	Button(Source)	CAC6494
56	Button(1-6)	CAC6275
57	Button(B, A, Cross)	See Contrast table(2)
58	Button(Eject)	CAC6277
59	Spring	CBH2210
60	Cover	See Contrast table(2)
61	Keyboard Unit	See Contrast table(2)
62	LCD(LCD1801)	CAW1559
63	Connector(CN1801)	CKS3580
64	Holder	CNC8517
65	Rubber	CNV5954
66	Lighting Conductor	CNV5965
67	Rubber	CNV5966
68	Grille Unit	See Contrast table(2)
69	Cap	CNS1472
70	Resistor	RS1/2PMF102J

(2) CONTRAST TABLE

DEH-2130R/X1M/EW and DEH-2100R/X1M/EW are constructed the same except for the following:

Mark No.	Symbol and Description	Part No.	
		DEH-2130R/X1M/EW	DEH-2100R/X1M/EW
42	Panel	CNS5340	CNS5188
47	Detach Grille Assy	CXB4595	CXB4592
49	Button(Detach)	CAC5929	CAC5789
50	Button(+, -)	CAC6458	CAC6273
51	Chassis Unit	CXB4624	CXB4623
57	Button(B, A, Cross)	CAC6459	CAC6276
60	Cover	CNS5773	CNS5772
61	Keyboard Unit	CWM6779	CWM6778
68	Grille Unit	CXB4612	CXB4611

2.3 CD MECHANISM MODULE

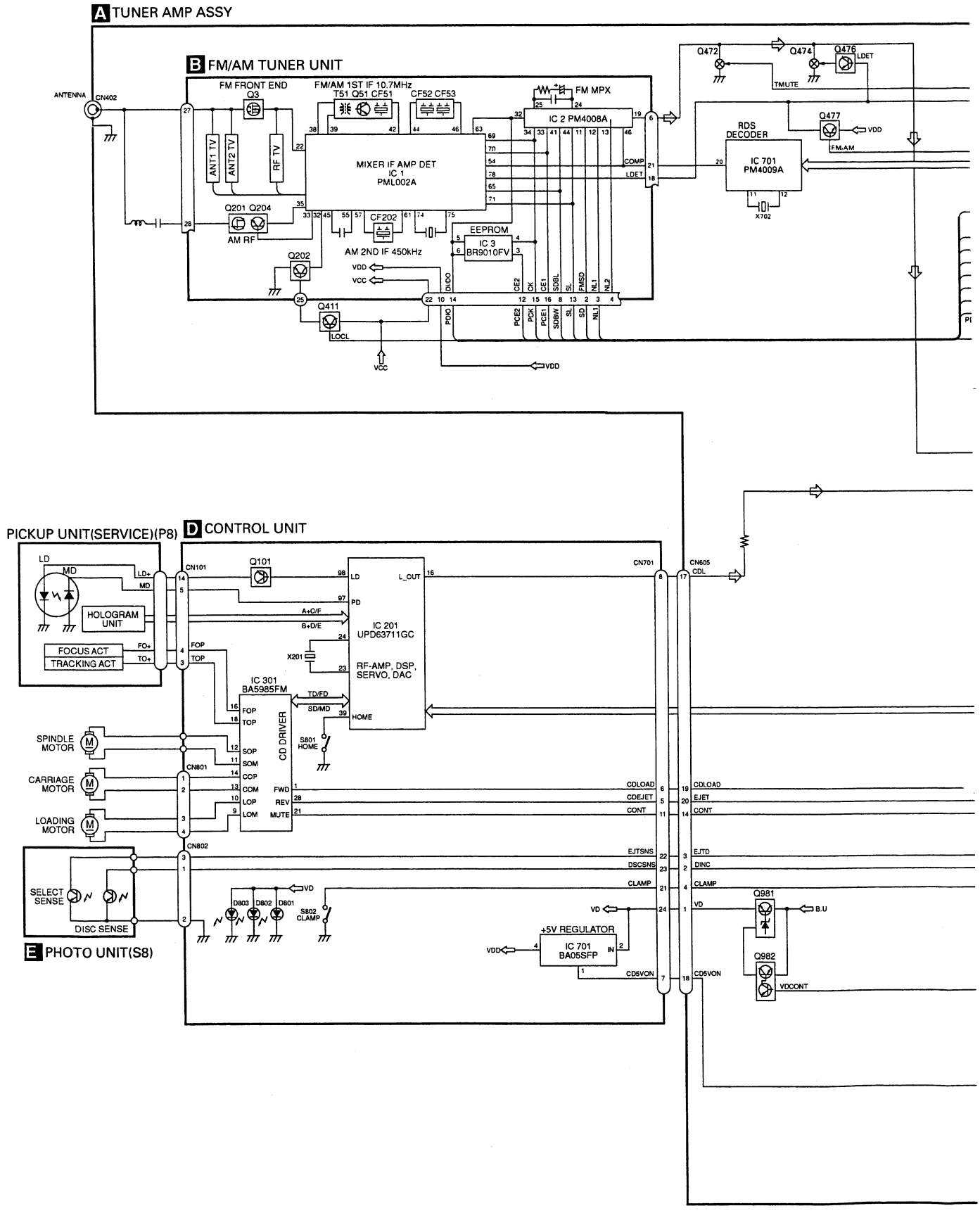


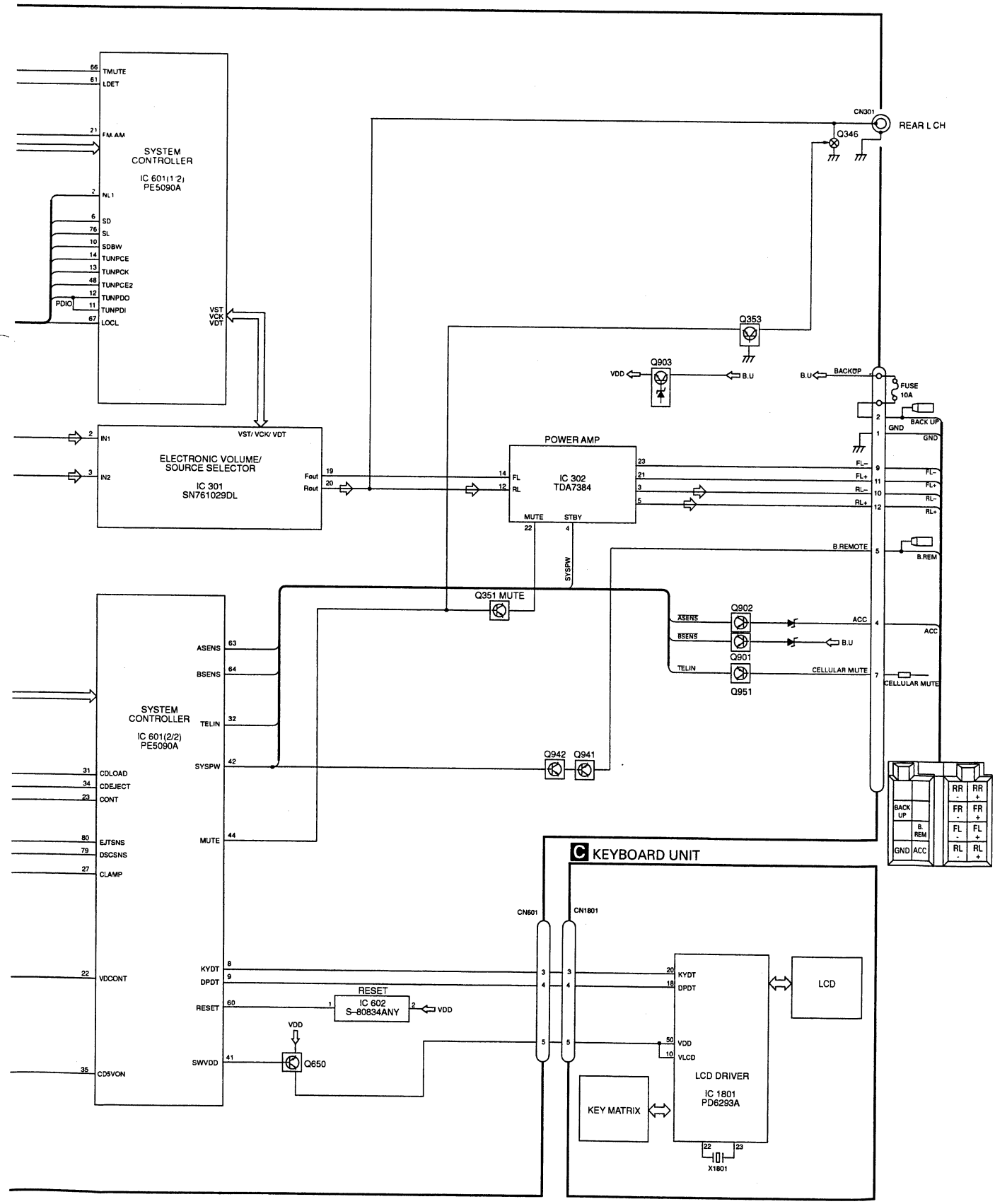
● CD MECHANISM MODULE SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Control Unit	CWX2411
	2	Connector(CN802)	CKS2192
	3	Connector(CN801)	CKS2193
	4	Connector(CN701)	CKS2773
	5	Connector(CN101)	CKS3486
	6	Screw	BMZ20P030FMC
	7	Screw	BSZ20P040FMC
	8	Screw(M2x3)	CBA1077
	9	Screw(M2x5)	EBA1028
	10	Screw	CBA1243
	11	Screw(M2x4)	CBA1362
	12	Washer	CBF1037
	13	Washer	CBF1038
	14	Washer	CBF1060
	15	•••••	
	16	Spring	CBH2079
	17	Spring	CBH2117
	18	Spring	CBH2314
	19	Spring	CBH2110
	20	Spring	CBH2282
	21	Spring	CBH2318
	22	•••••	
	23	Spring	CBH2324
	24	Spring	CBH2118
	25	Spring	CBH2161
	26	Spring	CBH2163
	27	Spring	CBH2189
	28	Spring	CBH2249
	29	Spring	CBH2260
	30	Spring	CBH2262
	31	Bracket	CNC8568
	32	Spring	CBL1369
	33	Connector	CDE5531
	34	Connector	CDE5532
	35	Shaft	CLA3304
	36	Screw(M2.6x6)	CBA1458
	37	Frame	CNC8565
	38	Frame	CNC8749
	39	Lever	CNC7546
	40	Arm	CNC8663
	41	Bracket	CNC8567
	42	•••••	
	43	Spacer	CNM3315
	44	Sheet	CNM6659
	45	•••••	
	46	•••••	
	47	Ball	CNR1189
	48	Belt	CNT1086
	49	Roller	CNV4509
	50	Arm	CNV6037
	51	Arm	CNV5247
	52	Arm	CNV5248
	53	Arm	CNV5249
	54	Guide	CNV5254
	55	Guide	CNV5255
	56	Gear	CNV5257
	57	Gear	CNV5256
	58	Guide	CNV6176
	59	Damper	CNV6174
	60	Arm	CNV6096
	61	Arm	CNV6031
	62	Arm	CNV6211
	63	Guide	CNV6012
	64	Guide	CNV5510
	65	•••••	
	66	Guide	CNV5751
	67	Clamper	CNV6013
	68	Gear	CNV5813
	69	Motor Unit(M1)	CXB2190
	70	Screw Unit	CXB4726
	71	Chassis Unit	CXB4797
	72	Gear Unit	CXB4728
	73	Arm Unit	CXB4729
	74	Motor Unit(M2)	CXB2195
	75	Lever Unit	CXB4730
	76	Arm Unit	CXB4731
	77	Motor Unit(M3)	CXB2562
	78	Arm Unit	CXB4732
	79	Bracket Unit	CXB4795
	80	Screw	JFZ20P025FMC
	81	Screw	JGZ17P025FZK
	82	Washer	YE20FUC
	83	Pickup Unit(Service)(P8)	CXX1285
	84	Screw	IMS26P030FMC
*	85	PCB	CNX2982
	86	Photo-transistor(Q1, 2)	CPT230SX-TU
	87	Damper	CNV6175
	88	Rack	CNV6014
	89	Spring	CBH2315

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

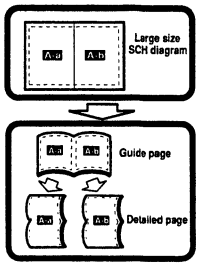
3.1 BLOCK DIAGRAM




SYSTEM CONTROLLER
IC 601(1/2)
PE5090A
TMUTE
LDET
FM.AM
NL1
SD
SL
SDBW
TUNPCE
TUNPCK
TUNPCE2
TUNPDO
TUNPDI
LOCL
PDIO
VST
VCK
VDT
ELECTRONIC VOLUME/
SOURCE SELECTOR
IC 301
SN761029DL
IN1
IN2
VST/ VCK/ VDT
Fout
Rout
POWER AMP
IC 302
TDA7384
FL
RL
MUTE
STBY
SYSPW
Q351 MUTE
Q353
Q903
Q346
CN301
REAR L CH
VDD
B.U
BACKUP
FUSE
10A
BACK UP
GND
FL-
FL+
RL-
RL+
B.REMOTE
B.REM
ASENS
BSENS
TELIN
Q902
Q901
Q951
ACC
CELLULAR MUTE
SYSTEM CONTROLLER
IC 601(2/2)
PE5090A
CDLOAD
CDEJECT
CONT
EJTSNS
DSCSNS
CLAMP
VDCONT
CD5VON
KYDT
DPDT
RESET
SWVDD
Q942
Q941
MUTE
IC 602
S-80834ANY
Q650
C KEYBOARD UNIT
CN601
CN1801
LCD
LCD DRIVER
IC 1801
PD6293A
KEY MATRIX
VLCD
X1801
BACK UP
B. REM
GND
ACC
RR
FR
FL
RL

3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



A-a

B FM/AM TUNER UNIT

C KEYBOARD UNIT

SYSTEM CONTROLLER

NOTE :
- ⇦ Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- ⊣⊢ Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

For resistors and capacitors in the circuit diagrams, their resistance values or capacitance values are expressed in codes:

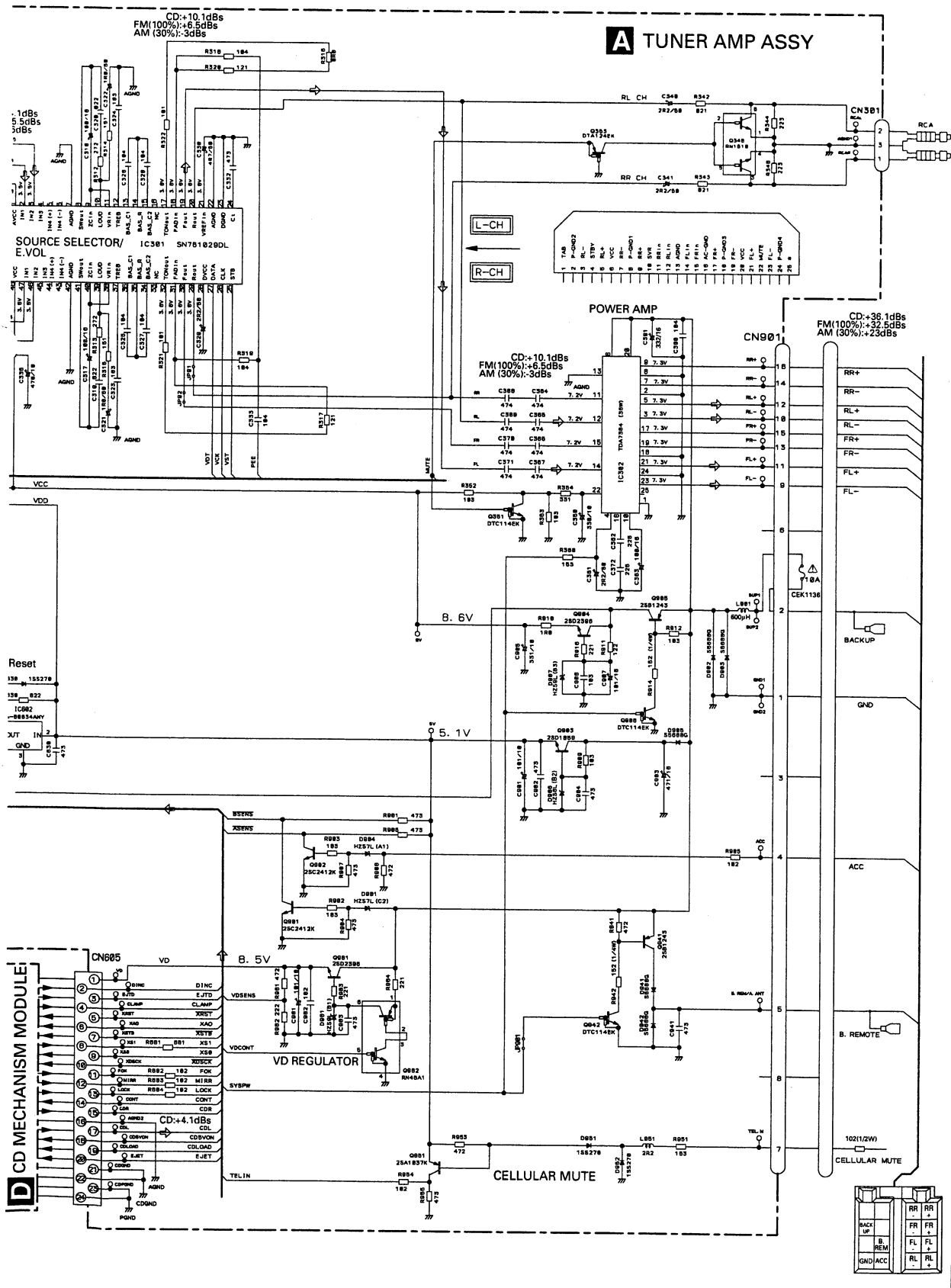
Ex. *Resistors

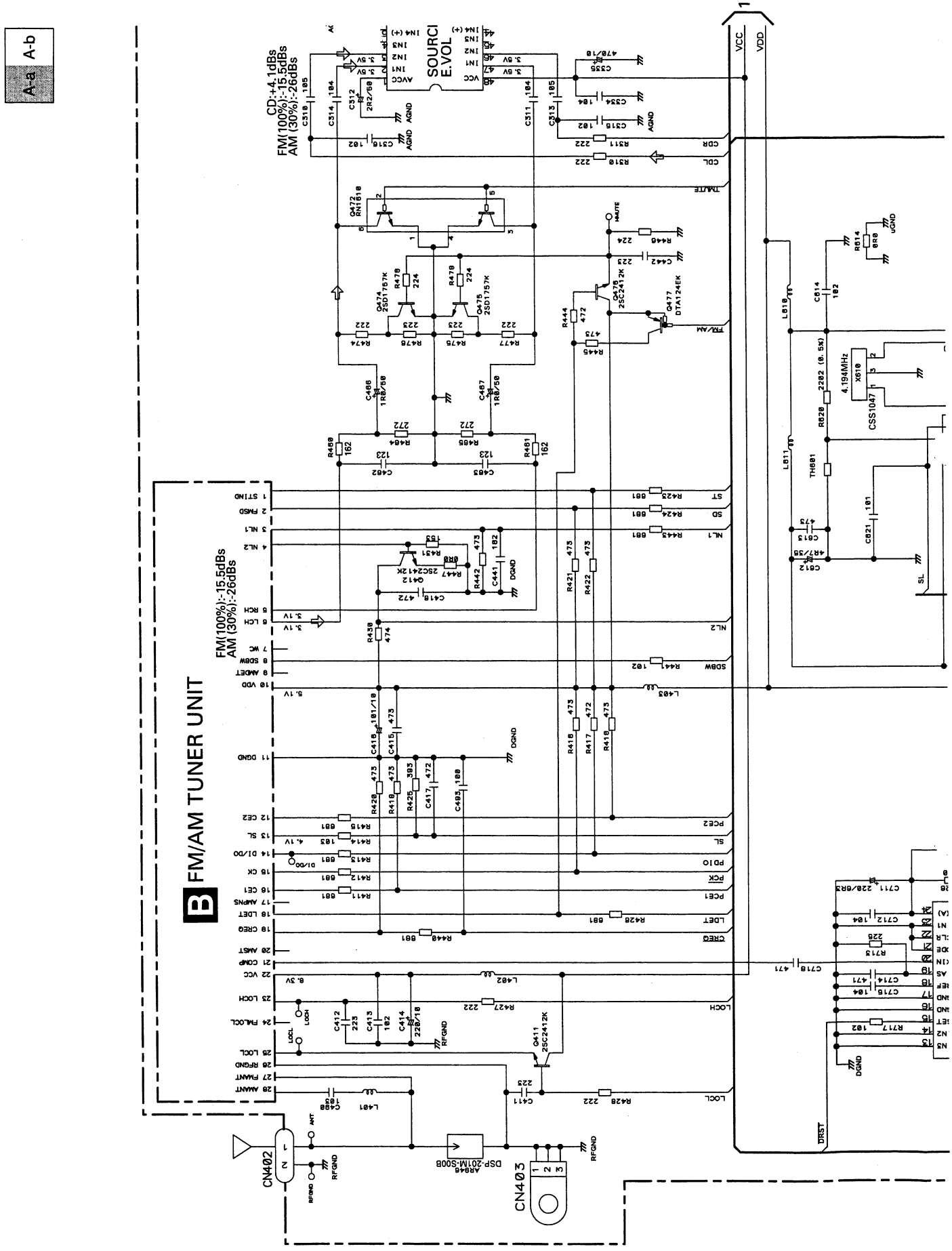
Code	Practical value
123	12k ohms
103	10k ohms

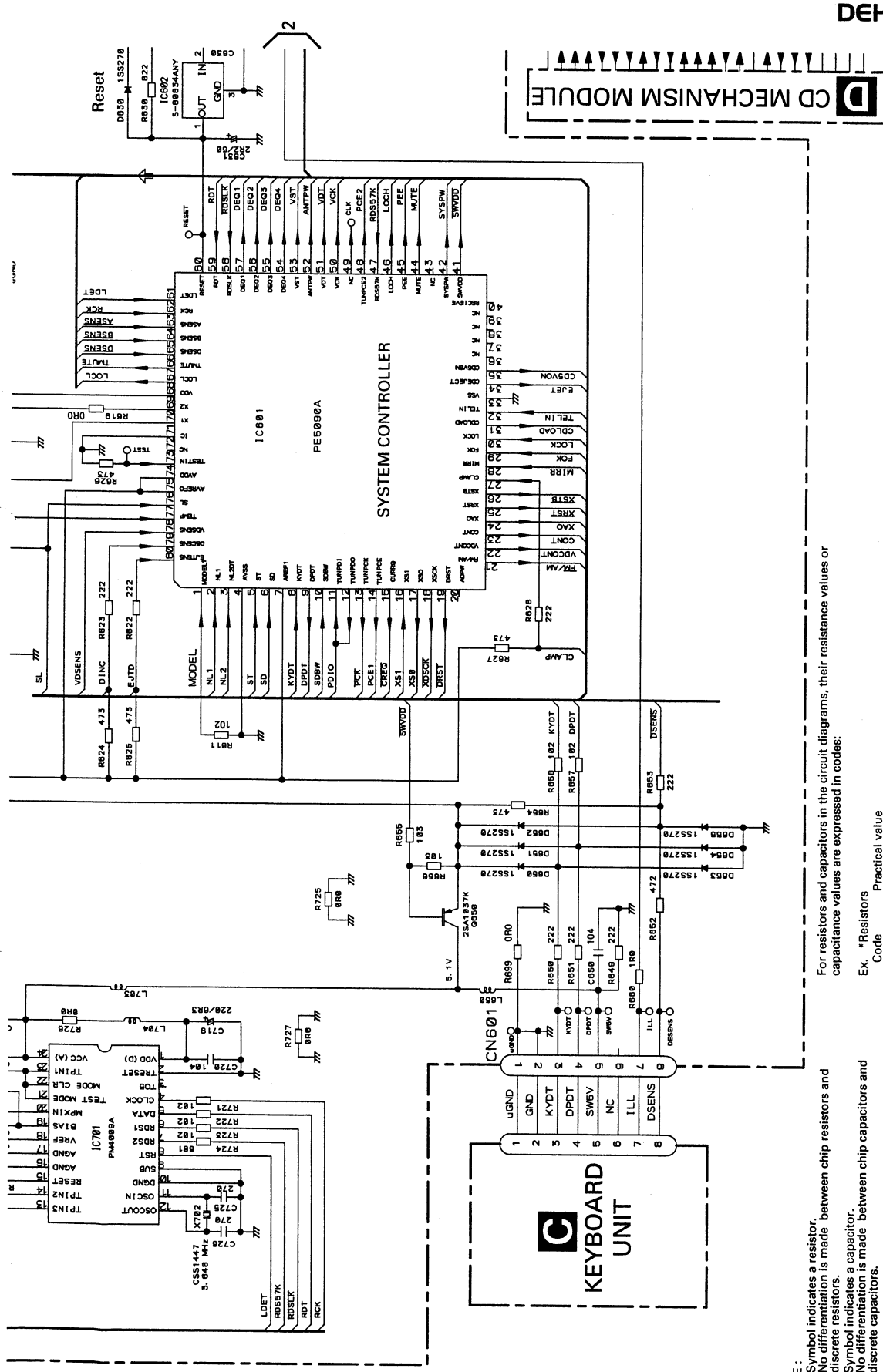
*Capacitors

Code	Practical value
103	0.01μF
101/10	100μF/10V

A-b


A TUNER AMP ASSY
CD:+10.1dBs
FM(100%):+6.5dBs
AM (30%):-3dBs
SOURCE SELECTOR/
E.VOL
IC301 SN761029DL
L-CH
R-CH
POWER AMP
CD:+36.1dBs
FM(100%):+32.5dBs
AM (30%):+23dBs
CN901
CN301
RCA
RL CH
RR CH
VCC
VDD
8. 6V
5. 1V
8. 5V
Reset
CN605
D CD MECHANISM MODULE
VD REGULATOR
CELLULAR MUTE
BACKUP
GND
ACC
B. REMOTE
CEK1136
10A
600μH
102(1/2W)
RR+
RR−
RL+
RL−
FR+
FR−
FL+
FL−


A-b
A-a
B FM/AM TUNER UNIT
FM(100%):-15.5dBs
AM (30%):-26dBs
CD:+4.1dBs
FM(100%):-15.5dBs
AM (30%):-26dBs
SOURCE
E.VOL
VCC
VDD
CN402
CN403
DSP-201M-S00B
4.194MHz
CSS1047
DGND
RFGND
AGND
DRST



NOTE :
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

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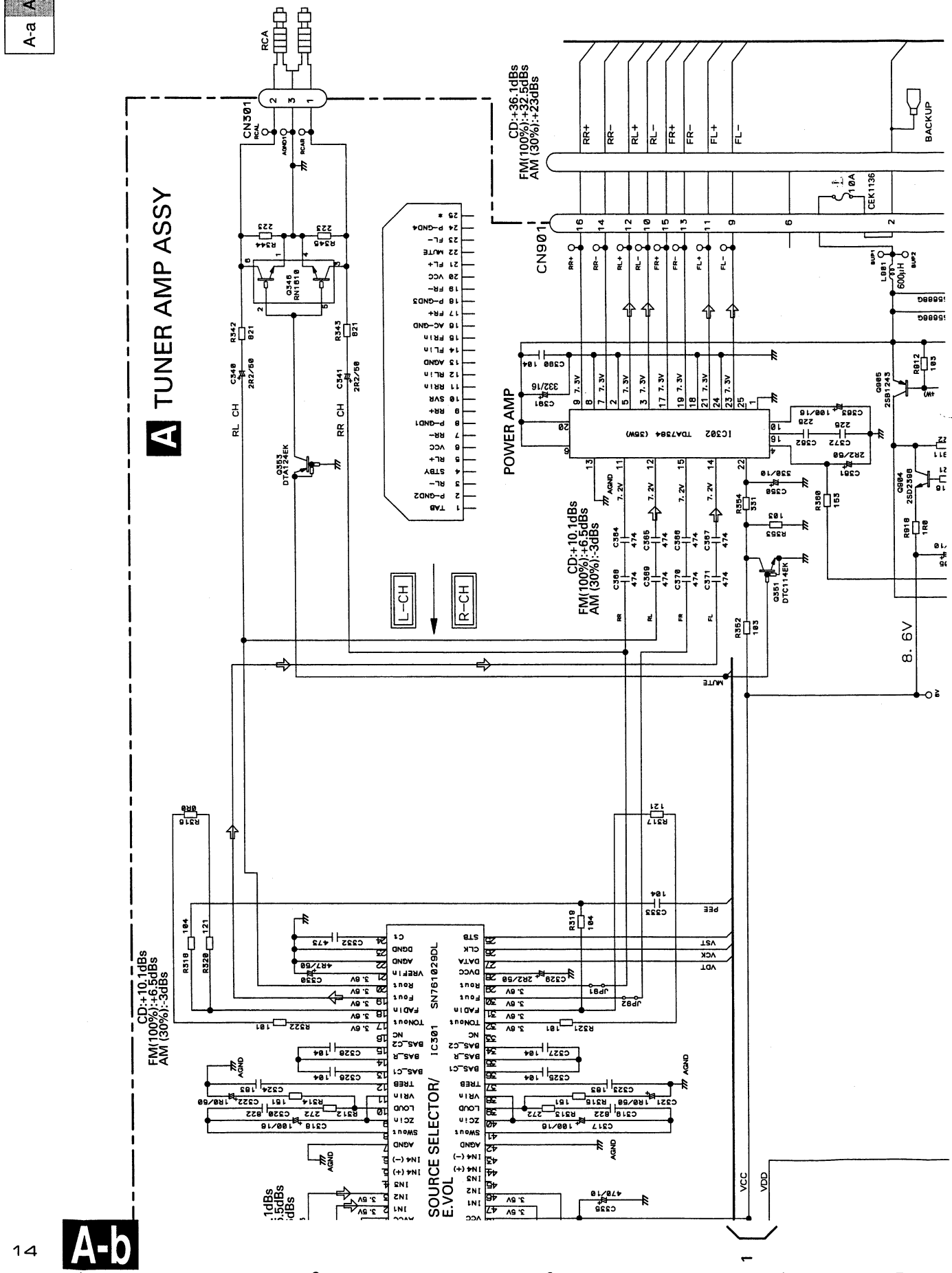
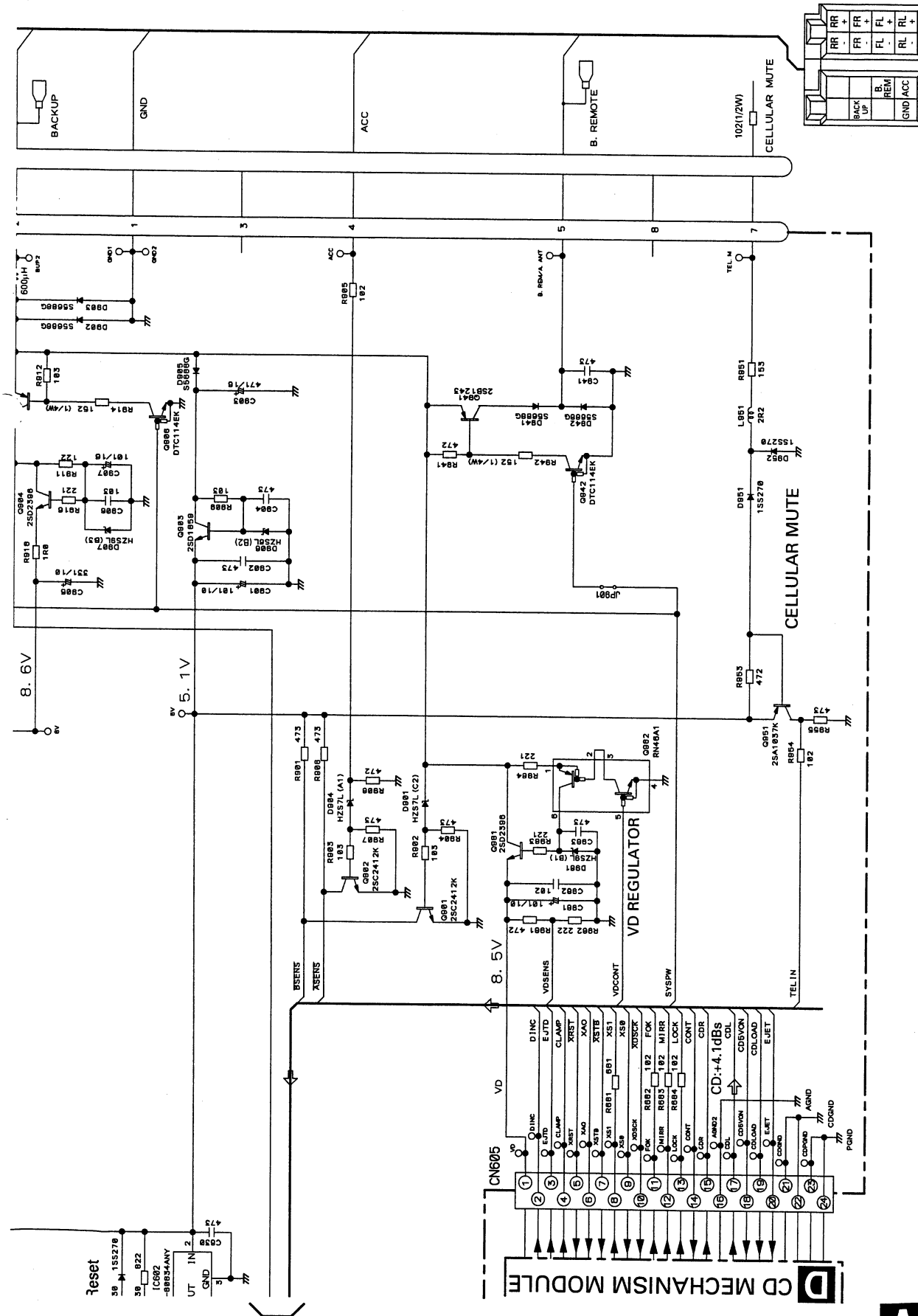
103	10k ohms

*Capacitors

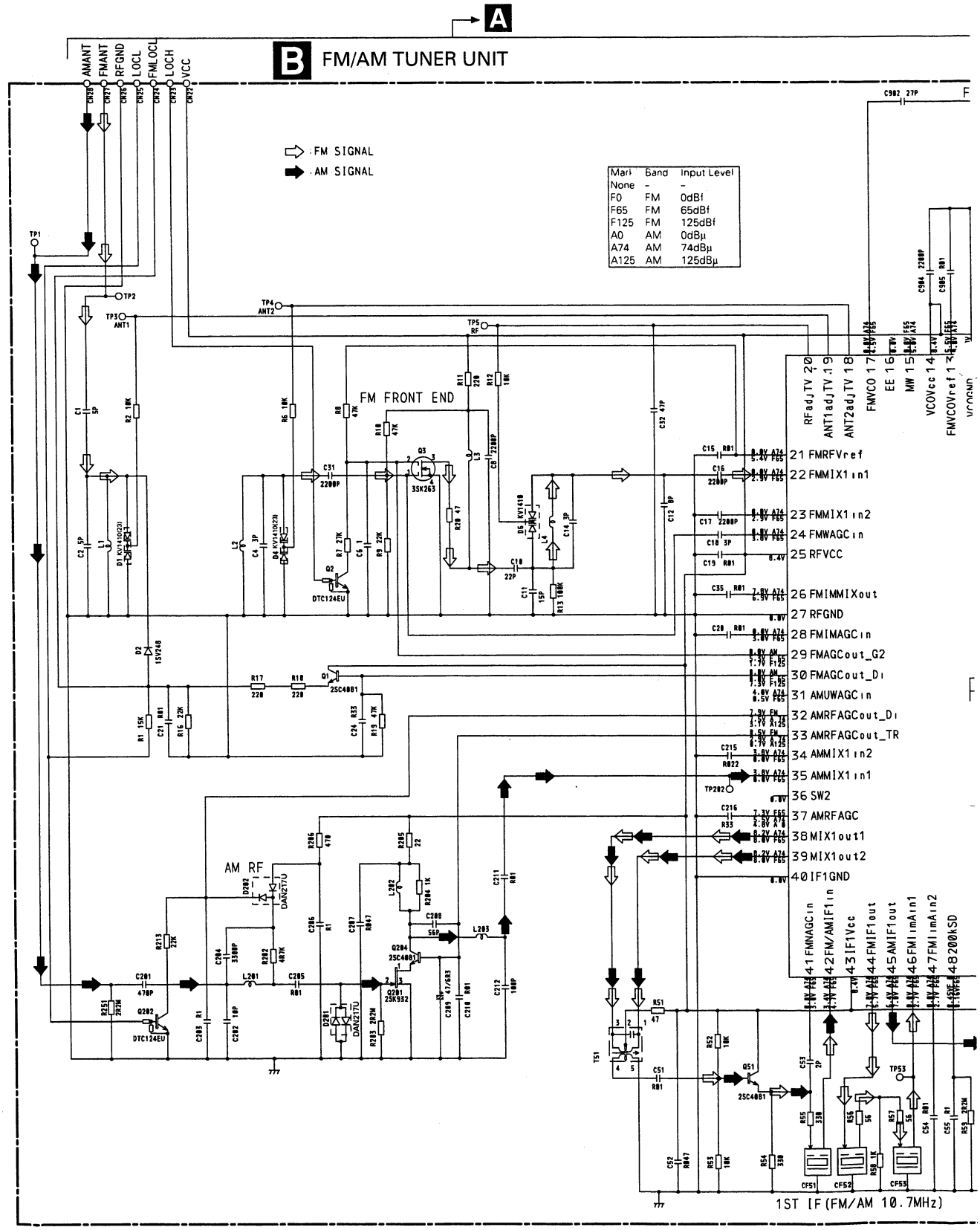
Code	Practical value
103	0.01µF
101/10	100µF/10V

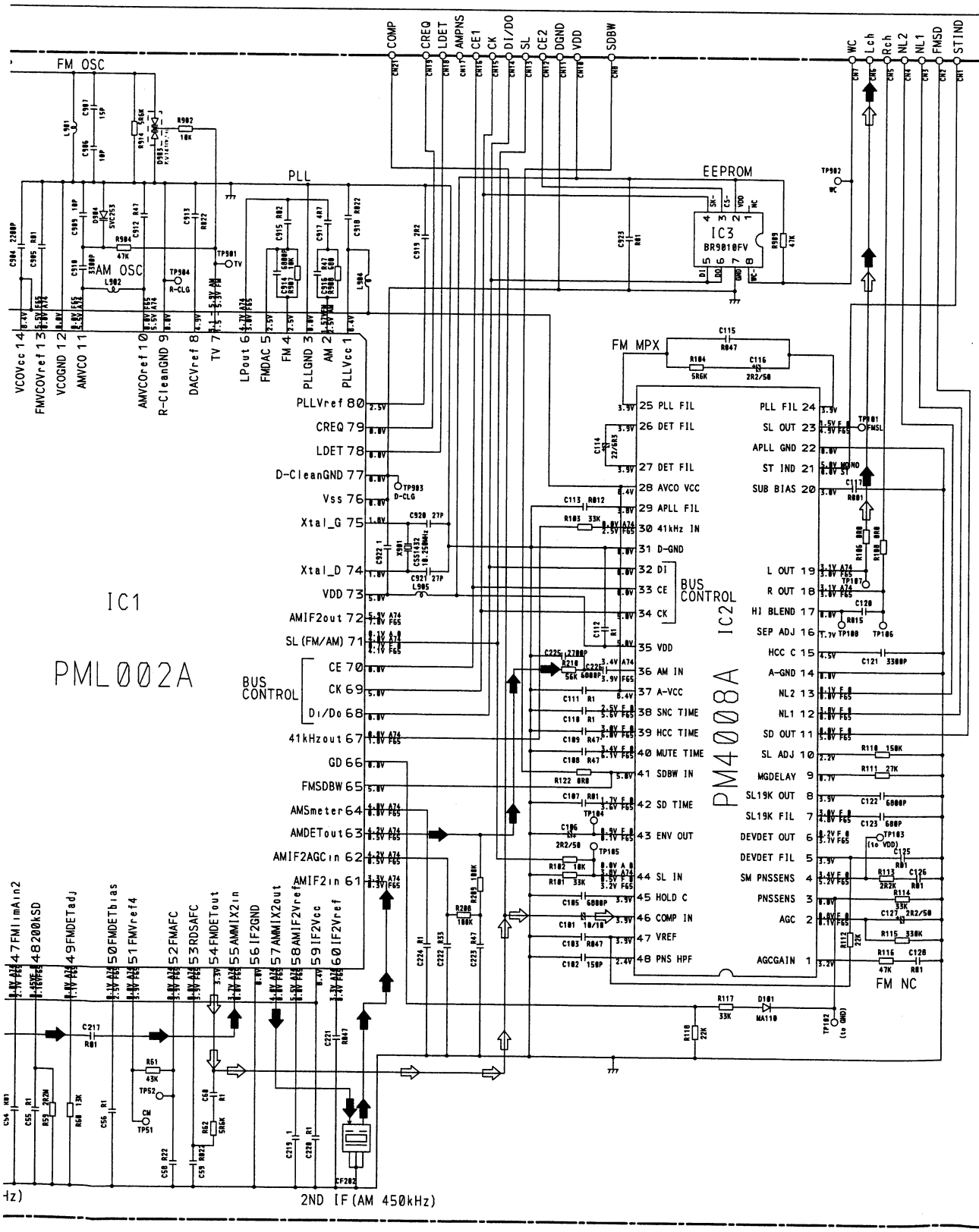
A-a A-b


A TUNER AMP ASSY
RCA
CN301
CN901
POWER AMP
IC302 TDA7384 (35W)
SOURCE SELECTOR/ E.VOL
IC301 SN761029DL
RL CH
RR CH
L-CH
R-CH
BACKUP
CD:+36.1dBs FM(100%):+32.5dBs AM (30%):+23dBs
CD:+10.1dBs FM(100%):+6.5dBs AM (30%):-3dBs
8.6V
VCC
VDD

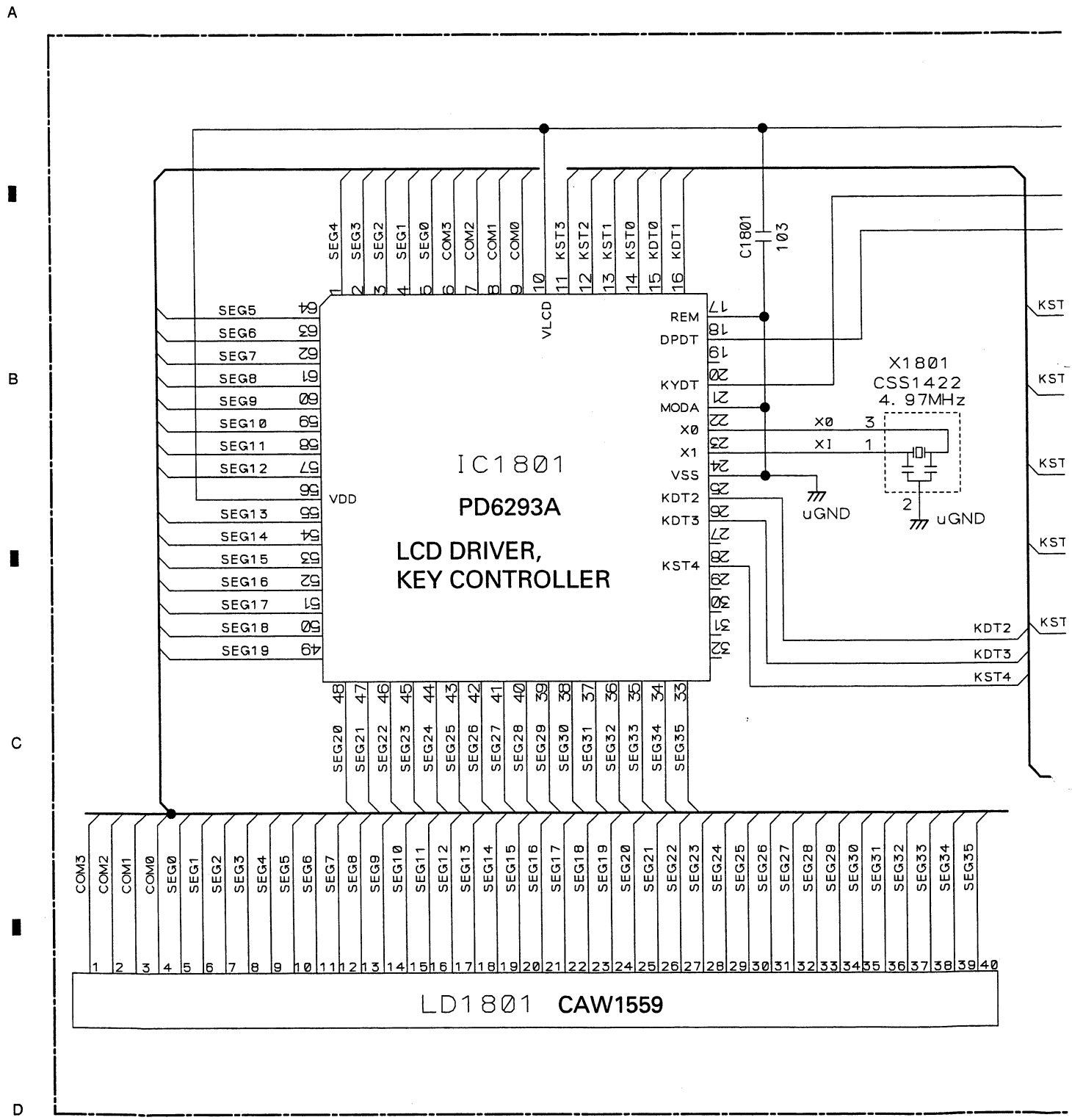

BACKUP
GND
ACC
B. REMOTE
102(1/2W)
CELLULAR MUTE
BACK UP
B. REM
GND ACC
RR + FR + FL + RL +
8. 6V
5. 1V
8. 5V
VD REGULATOR
CELLULAR MUTE
CD MECHANISM MODULE
CD:+4.1dBs
CN605
Reset
VT
IN
GND
BSENS
ASENS
VDSENS
VDCONT
SYSPW
TEL IN
DINC
EJTD
CLAMP
XRST
XAO
XSTB
XS1
XS0
XDSCK
FOK
M1RR
LOCK
CONT
CDR
AGND2
CDL
CDSVON
CDLOAD
EJET
CDGND
PGND

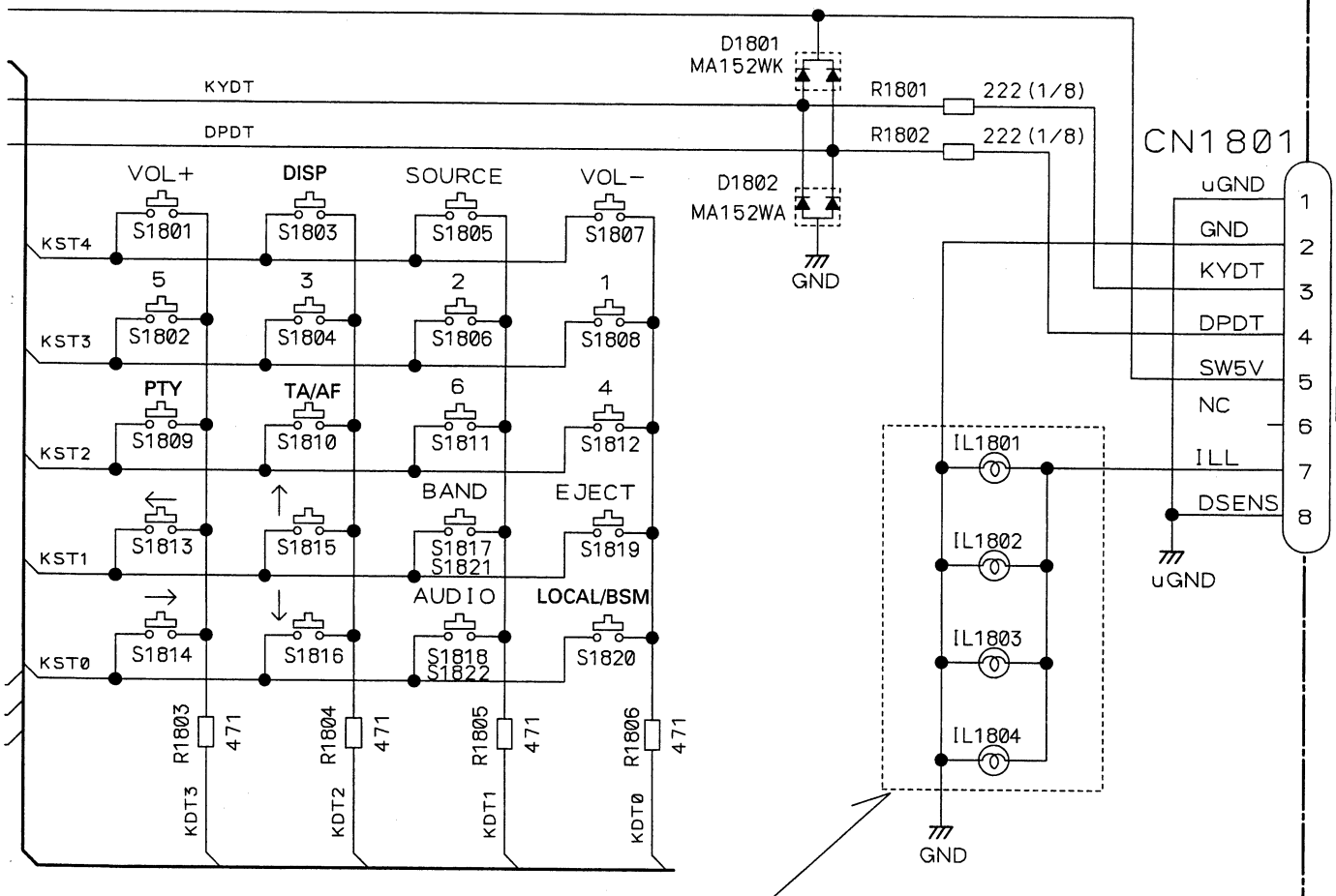
3.3 FM/AM TUNER UNIT




FM OSC
AM OSC
PLL
EEPROM
IC3
BR9010FV
FM MPX
IC1
PML002A
BUS CONTROL
IC2
PM4008A
FM NC
2ND IF (AM 450kHz)
COMP
CREQ
LDET
AMPNS
CE1
CK
DI/DO
SL
CE2
DGND
VDD
SDBW
WC
Lch
Rch
NL2
NL1
FMSD
STIND

C KEYBOARD UNIT



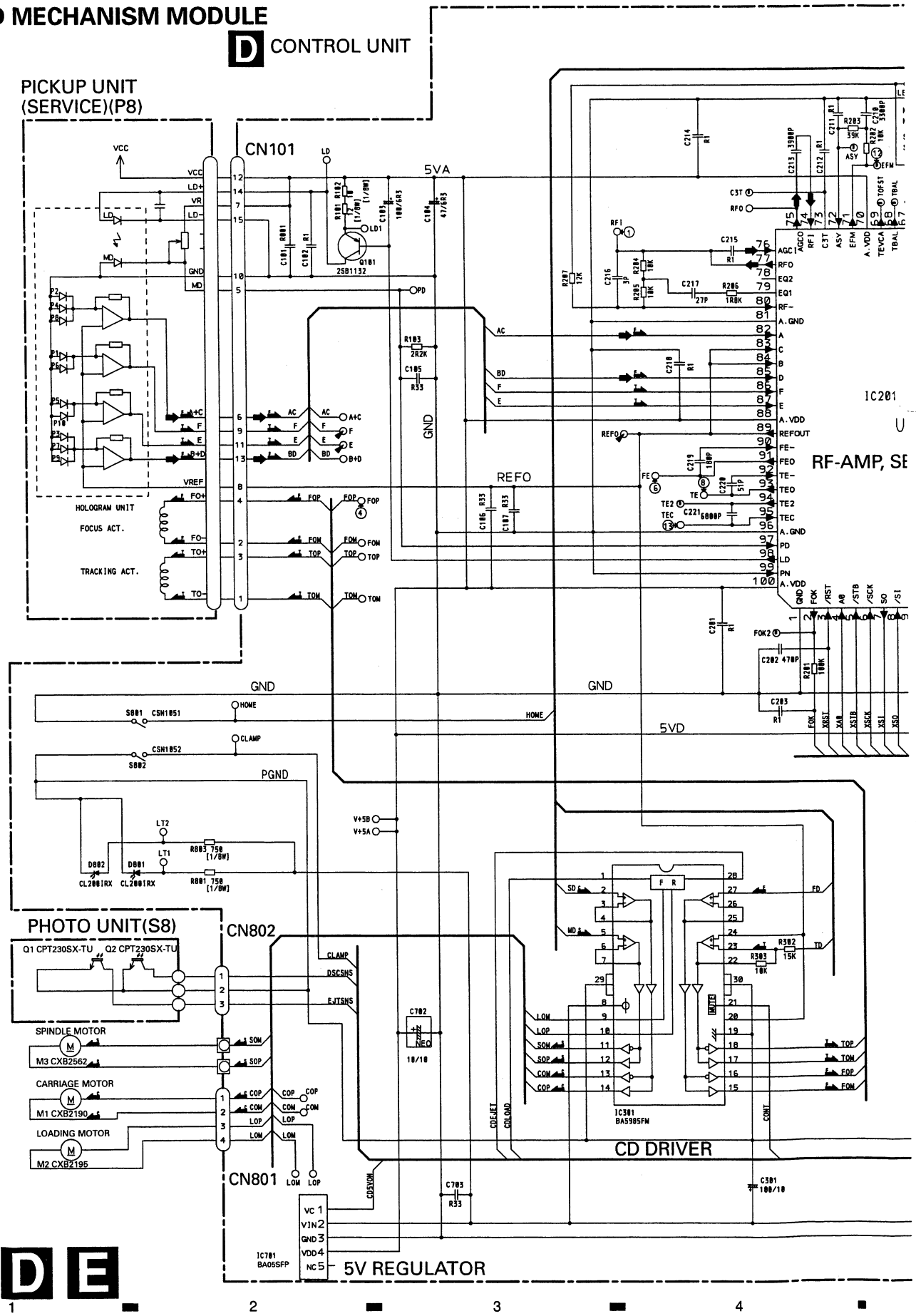


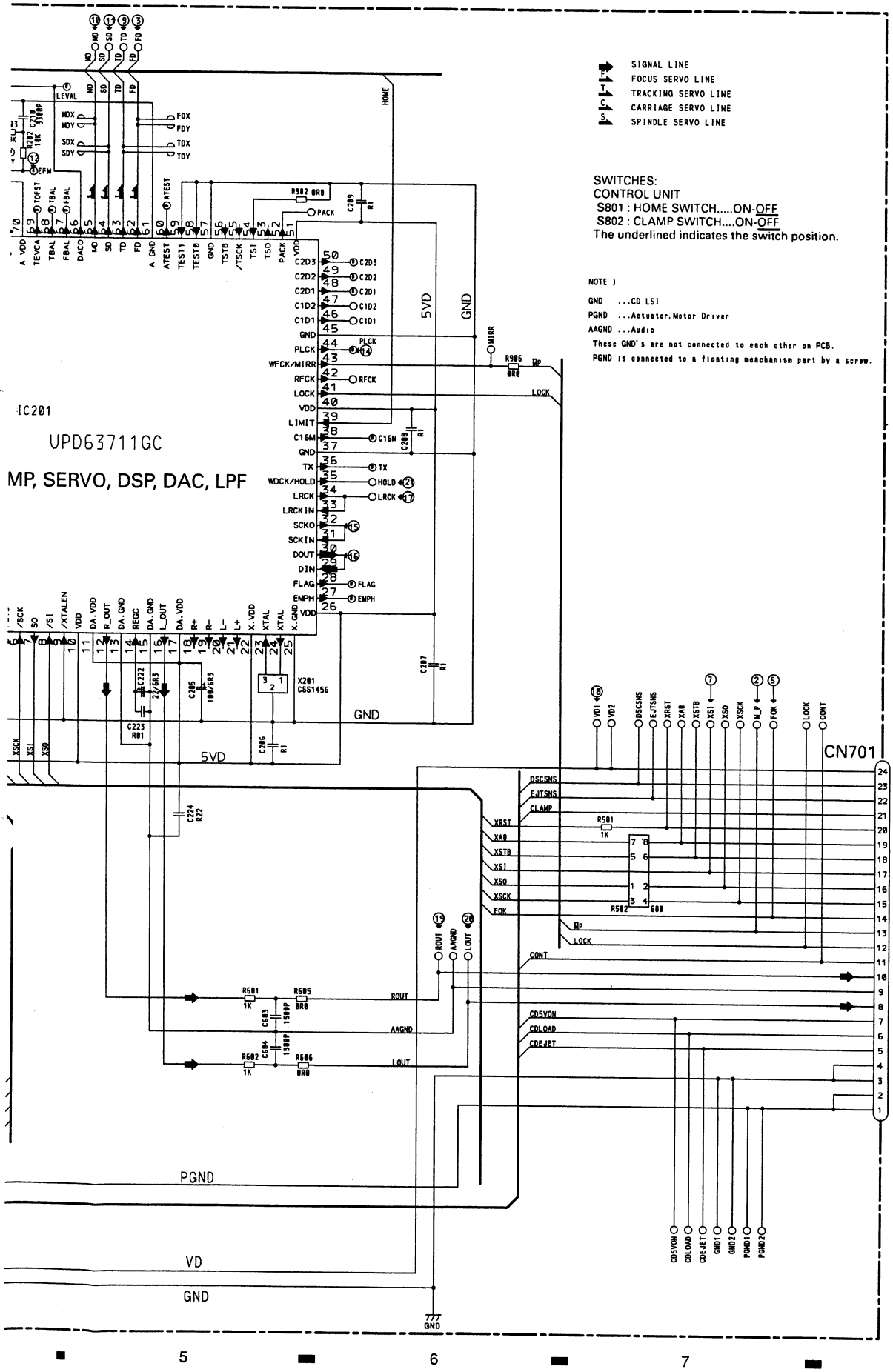
REMARK

CARBON CONTACT
RUBBER SWITCH

	DEH-2130R/X1M/EW	DEH-2100R/X1M/EW
IL1801-1804	CEL1638(14V 40mA)	CEL1547(14V 40mA)

3.5 CD MECHANISM MODULE

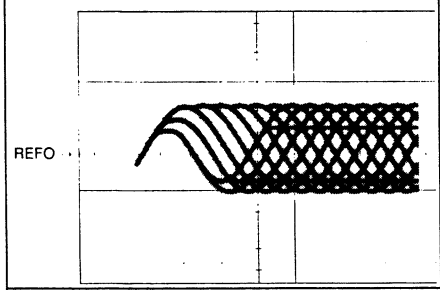



SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE
SWITCHES:
CONTROL UNIT
S801 : HOME SWITCH.....ON-OFF
S802 : CLAMP SWITCH....ON-OFF
The underlined indicates the switch position.
NOTE)
GND ...CD LSI
PGND ...Actuator, Motor Driver
AAGND ...Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating meachanism part by a screw.
IC201
UPD63711GC
MP, SERVO, DSP, DAC, LPF
CN701
CN605
5VD
GND
PGND
VD

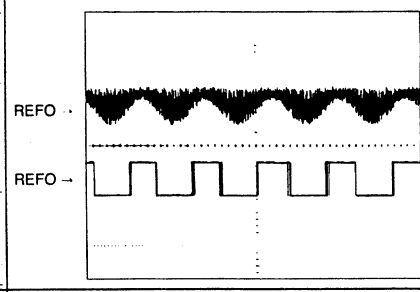
Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO:2.5V

● Waveforms

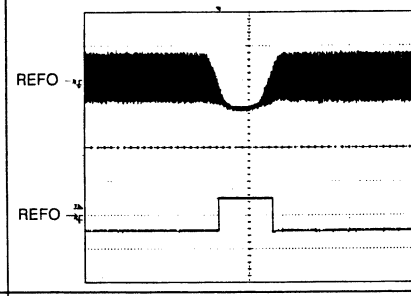
① RFI 0.5V/div. 0.5μs/div.
Normal mode: play



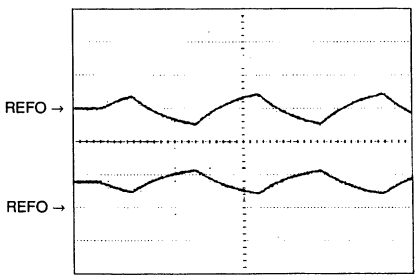
① CH1: RFI 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Test mode: Tracking open



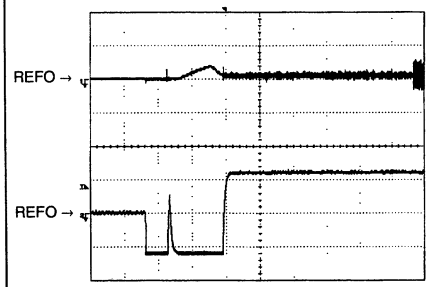
① CH1: RFI 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Normal mode: The defect part passes 800μm



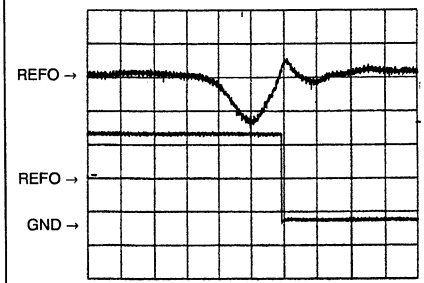
③ CH1: FD 0.5V/div. 0.2s/div.
④ CH2: FO+ 2V/div.
Test mode: No disc, Focus close



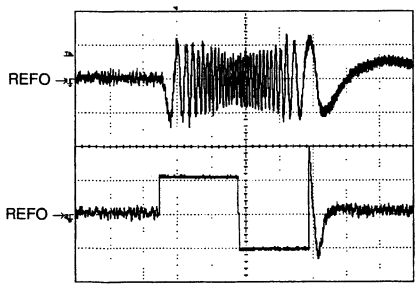
③ CH1: FD 0.5V/div. 0.2s/div.
⑤ CH2: FOK 2V/div.
Normal mode: Focus close



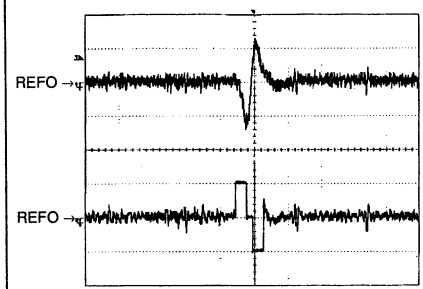
⑥ CH1: FE 0.5V/div. 1ms/div.
⑦ CH2: XSI 2V/div.
Normal mode: Focus close



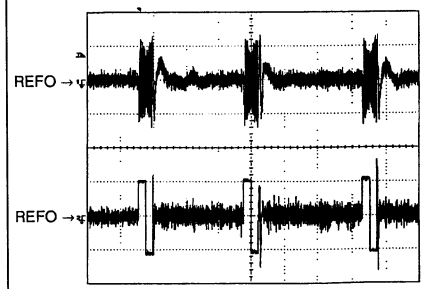
⑧ CH1: TE 0.5V/div. 0.5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: 32 tracks jump (FWD)



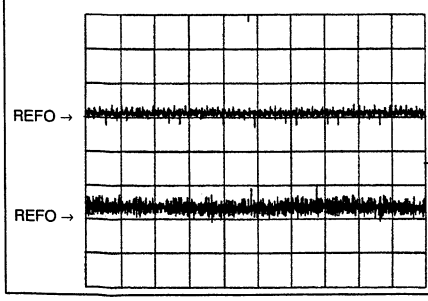
⑧ CH1: TE 0.5V/div. 0.5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: Single jump (FWD)



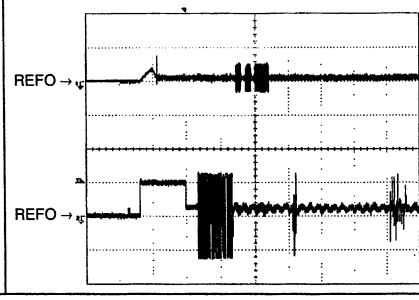
⑧ CH1: TE 0.5V/div. 5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: 100 tracks jump (FWD)



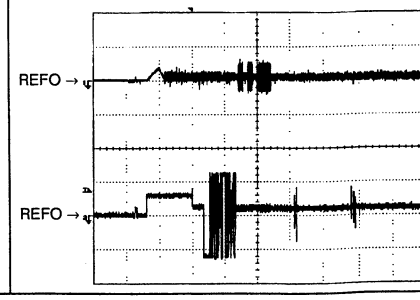
⑥ CH1: FE 0.1V/div. 20ms/div.
③ CH2: FD 0.2V/div.
Normal mode: Play



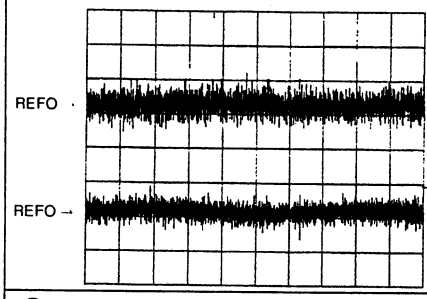
③ CH1: FD 0.5V/div. 0.5s/div.
⑩ CH2: MD 1V/div.
Normal mode: Focus close (12cm)



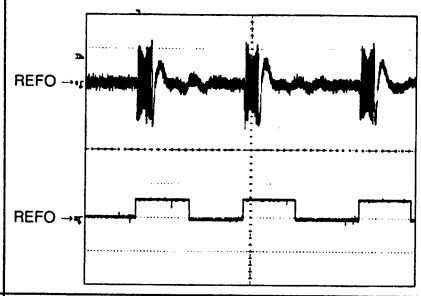
③ CH1: FD 0.5V/div. 0.5s/div.
⑩ CH2: MD 1V/div.
Normal mode: Focus close (8cm)



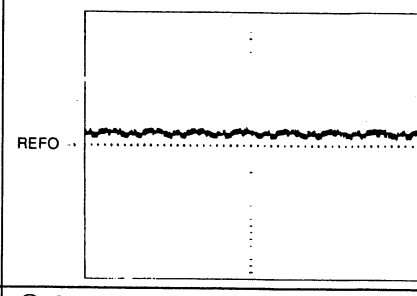
⑧ CH1: TE 0.2V/div. 20ms/div.
⑨ CH2: TD 0.2V/div.
Normal mode: play



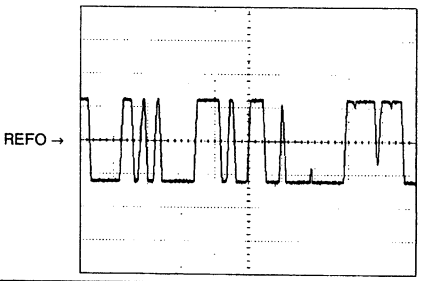
⑧ CH1: TE 0.5V/div. 5ms/div.
⑪ CH2: SD 0.5V/div.
TEST mode: 100 Tracks jump(FWD)



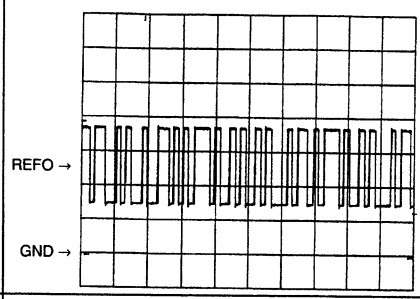
⑩ MD 0.5V/div. 0.1s/div.
Normal mode: Play (12cm)



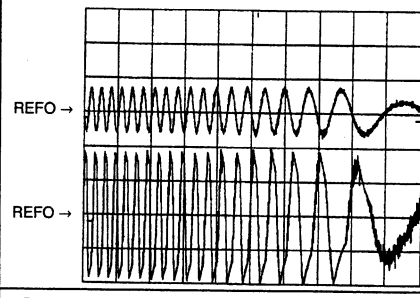
⑩ MD 1V/div. 10ms/div.
Normal mode:
Long Search (12cm)



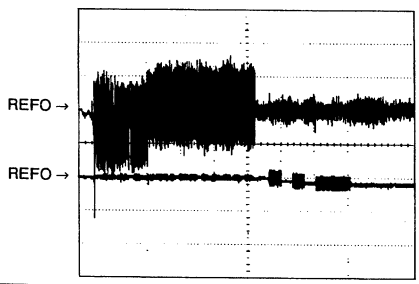
⑫ EFM 1V/div. 5µs/div.
Normal mode: play



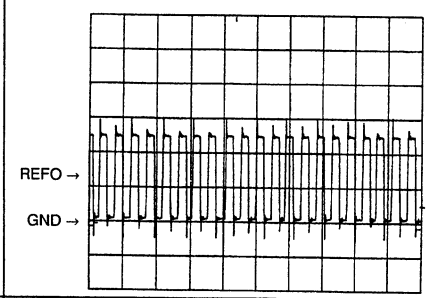
⑧ CH1: TE 1V/div. 2ms/div.
⑬ CH2: TEC 1V/div.
Test mode: Focus close
Tracking open



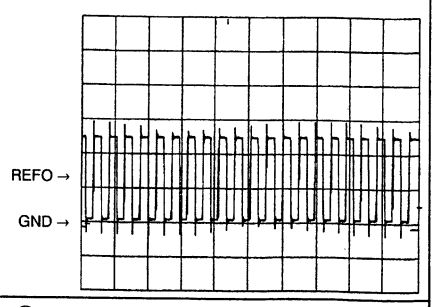
⑧ CH1: TE 0.5V/div. 0.2s/div.
⑥ CH2: FE 0.5V/div.
Normal mode: AGC after focus close



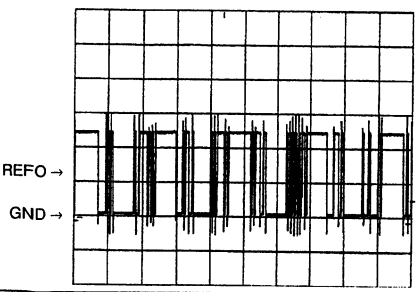
⑭ PLCK 2V/div. 0.5µs/div.
Normal mode: play



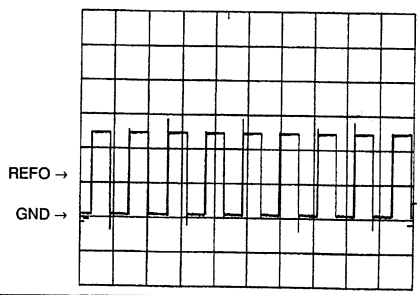
⑮ SCKO 2V/div. 1µs/div.
Normal mode: play



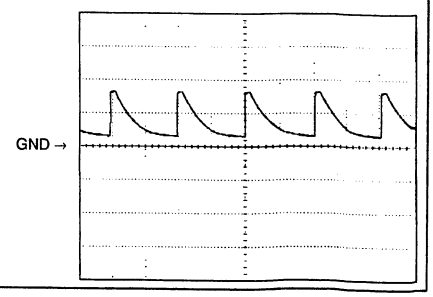
⑯ Dout 2V/div. 10µs/div.
Normal mode: play



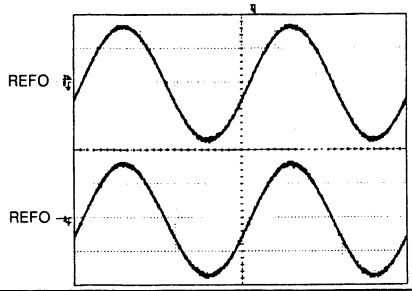
⑰ LRCK 2V/div. 20µs/div.
Normal mode: play



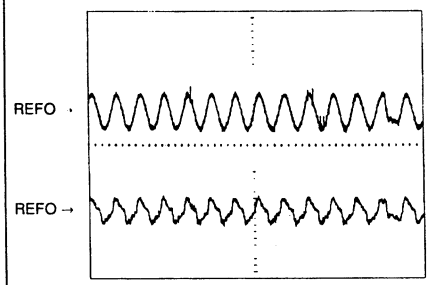
⑱ VD 5V/div. 50ms/div.
Normal mode: No disc



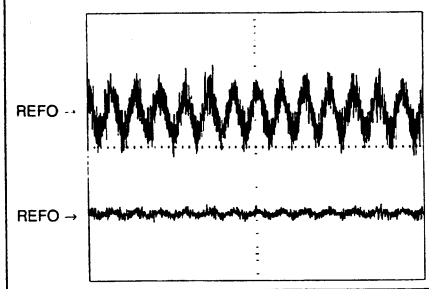
⑲ CH1: R OUT 1V/div. 0.2ms/div.
⑳ CH2: L OUT 1V/div.
Normal mode: Play (1kHz 0dB)



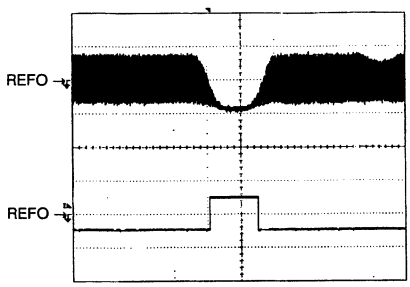
⑥ CH1: FE 0.2V/div. 1ms/div.
③ CH2: FD 0.5V/div.
Normal mode: During AGC



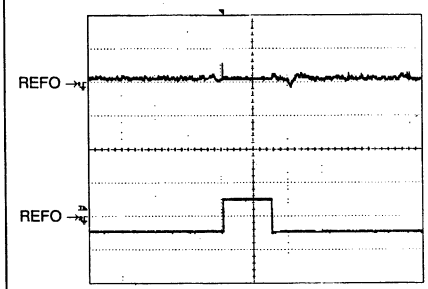
⑧ CH1: TE 0.2V/div. 1ms/div.
⑨ CH2: TD 0.5V/div.
Normal mode: During AGC



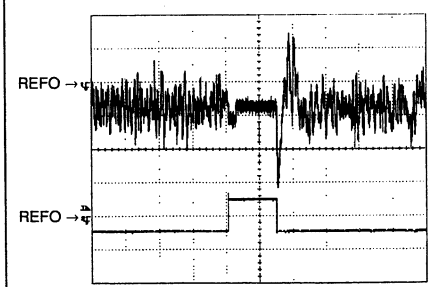
① CH1: RFI 1V/div. 0.5ms/div.
㉑ CH2: HOLD 5V/div.
Normal mode: The defect part passes 800μm(B.D)



③ CH1: FD 0.5V/div. 0.5ms/div.
㉑ CH2: HOLD 5V/div.
Normal mode: The defect part passes 800μm(B.D)



⑨ CH1: TD 0.1V/div. 0.5ms/div.
㉑ CH2: HOLD 5V/div.
Normal mode: The defect part passes 800μm(B.D)

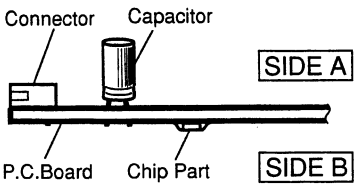


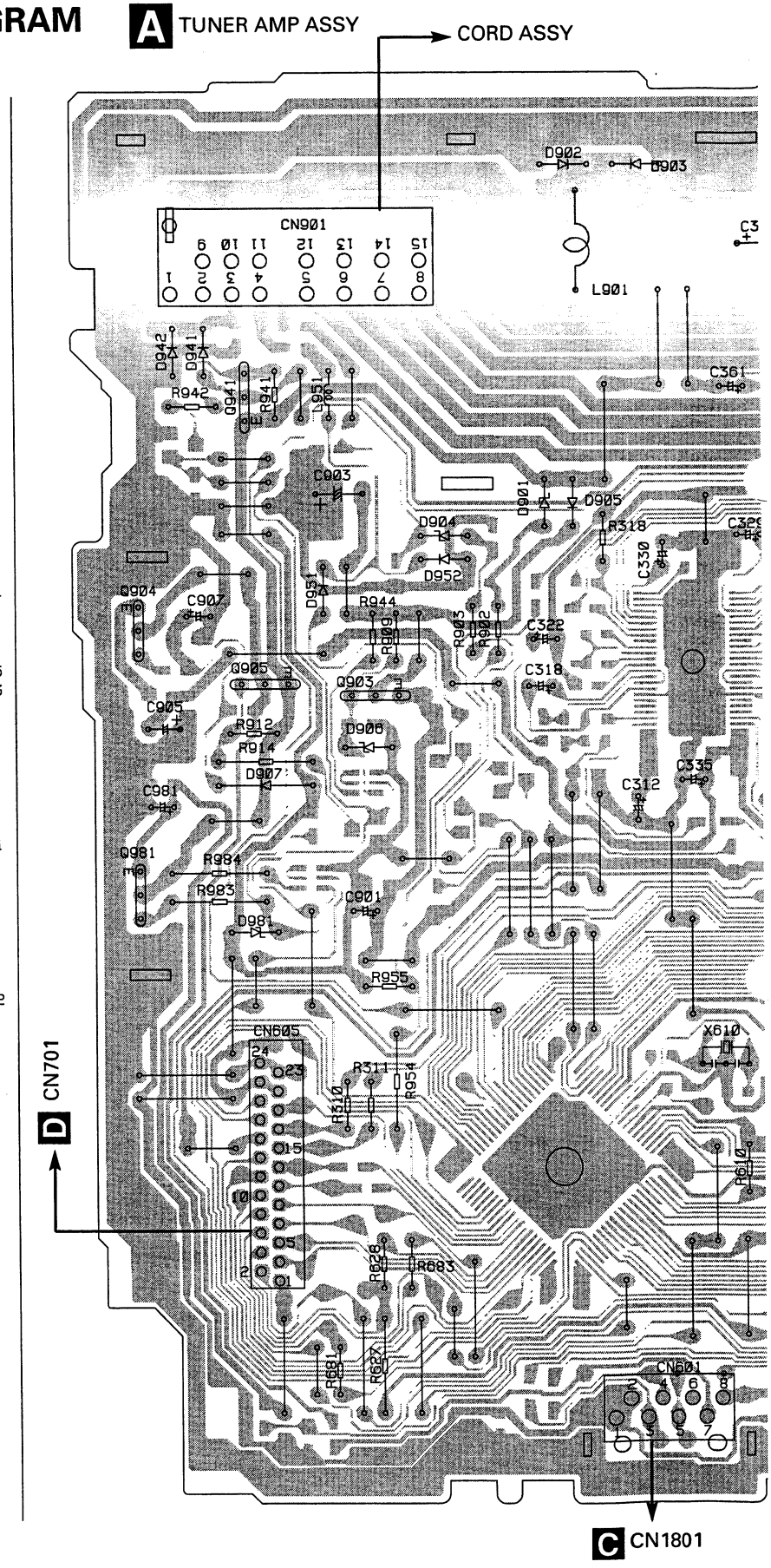
4. PCB CONNECTION DIAGRAM

4.1 TUNER AMP ASSY

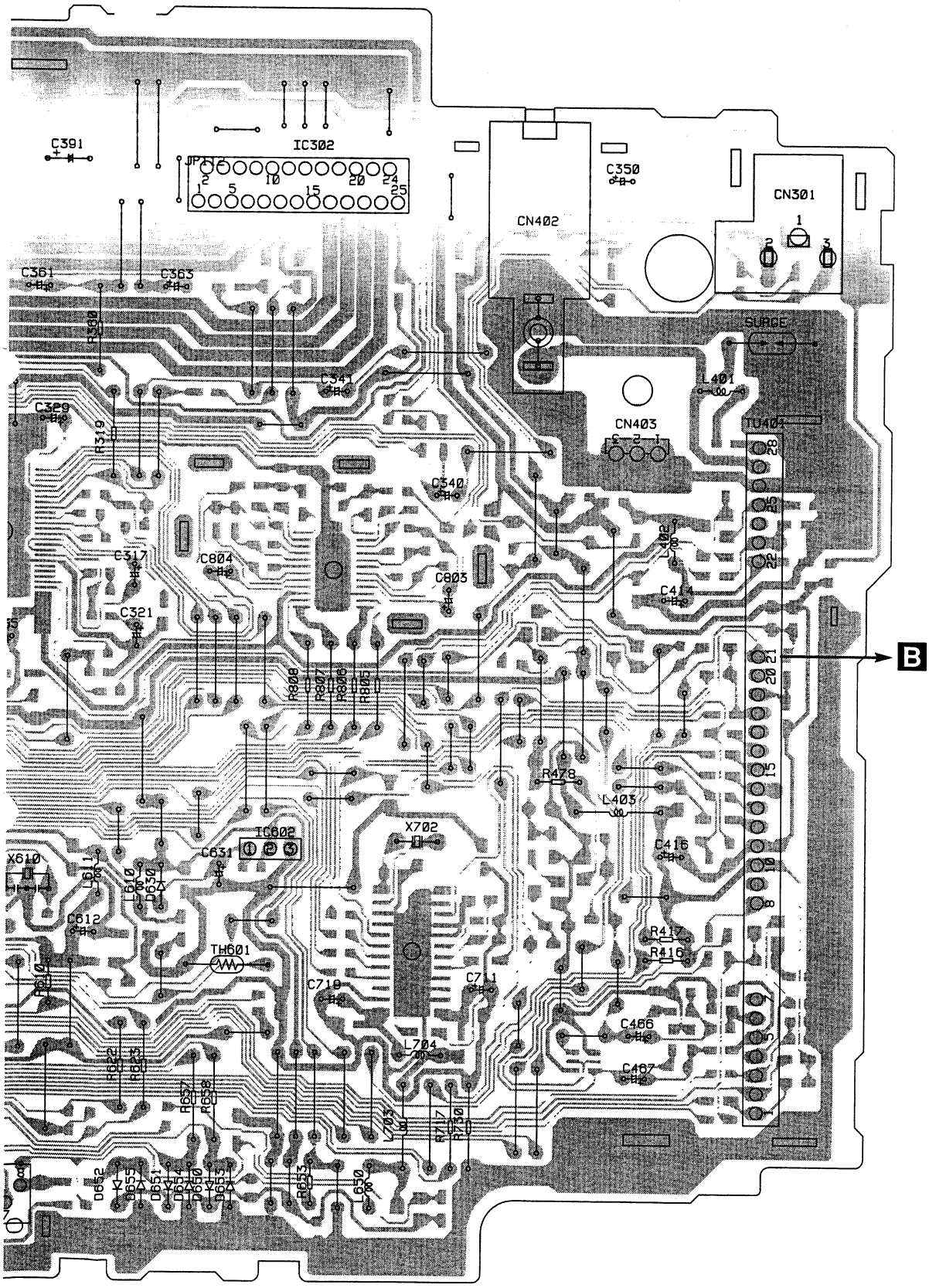
NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams

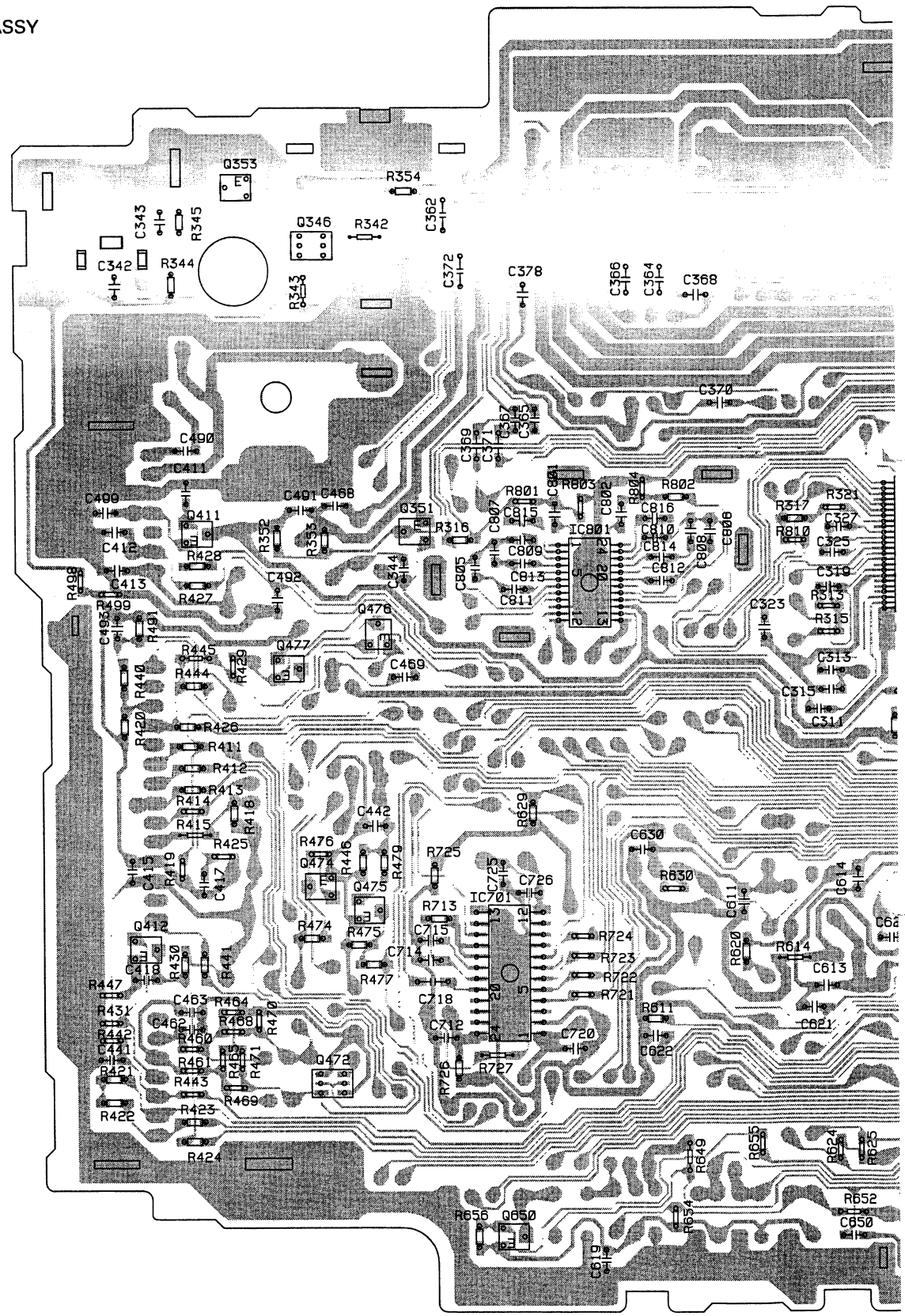




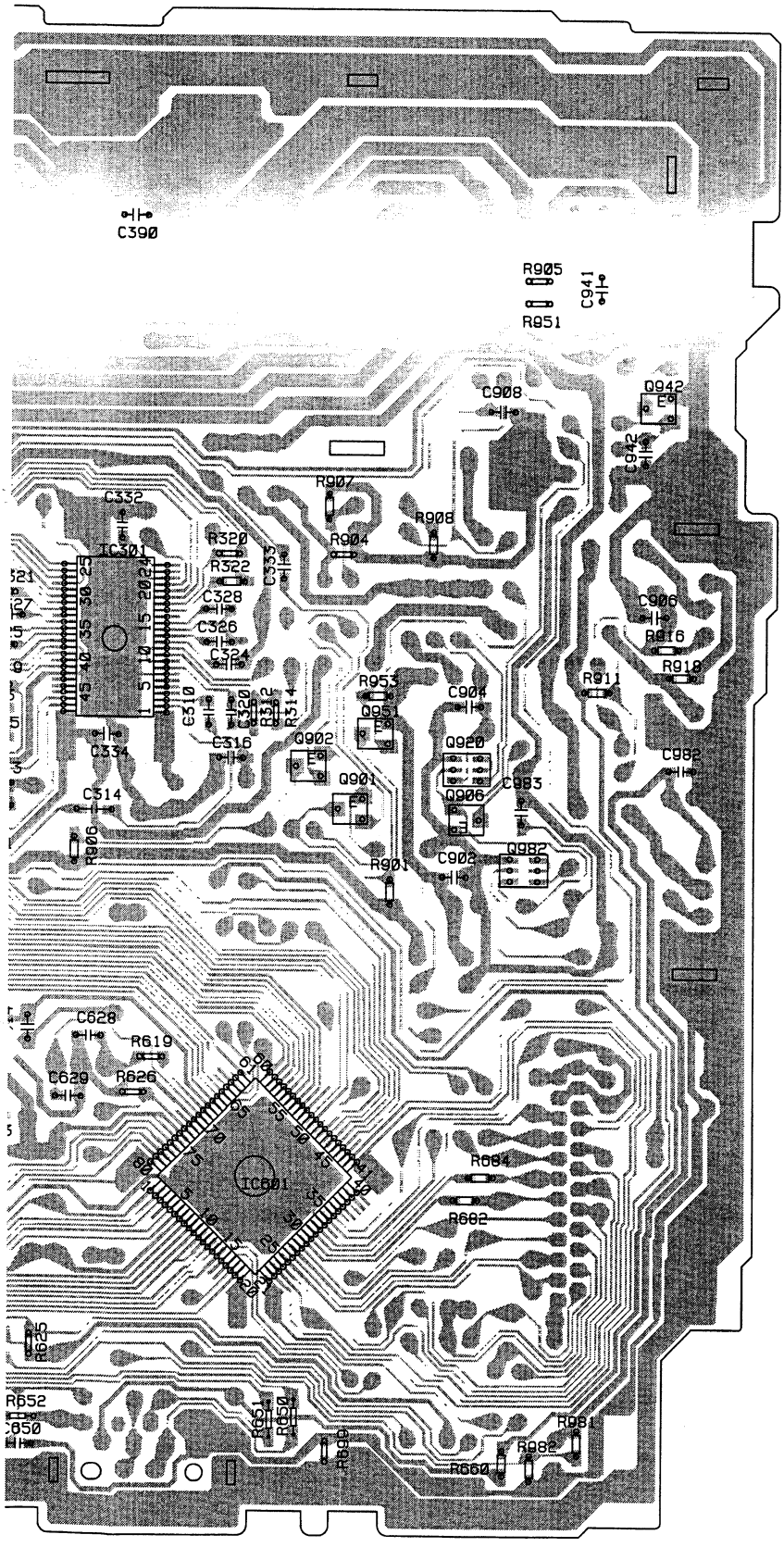
SIDE A


C391
IC302
C350
CN301
CN402
C361
C363
SURGE
C341
L401
C329
CN403
TU401
C340
C317
C804
C803
C414
C321
B
R478
L403
IC602
X702
C631
C416
X610
C612
TH601
R417
R416
C710
C711
C466
L704
C467
L703
C650

A TUNER AMP ASSY



SIDE B



IC, Q

Q353

Q346

Q942

IC301

Q411 Q351

Q476 Q951
Q902 Q920
Q477
Q901
Q906

Q982

Q474
Q475
IC701
Q412

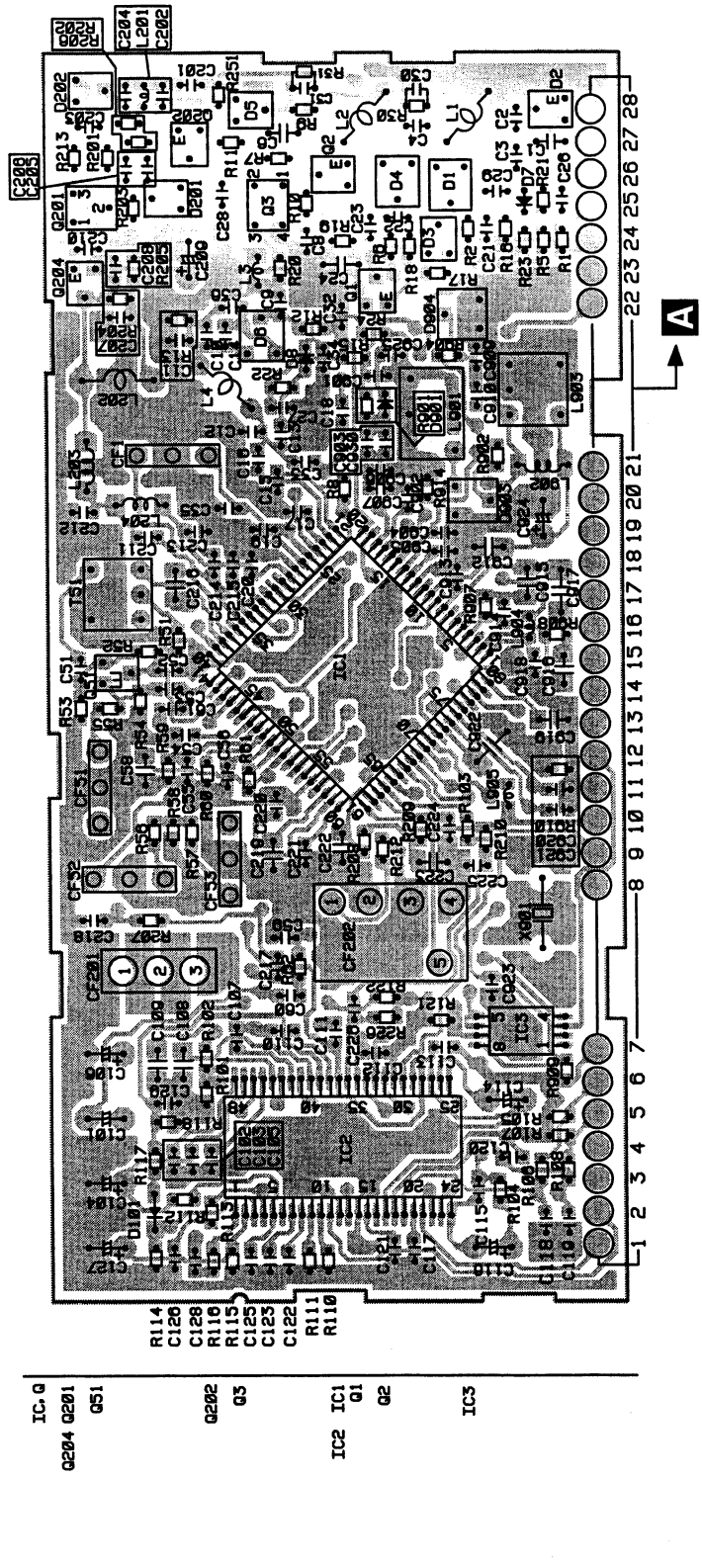
IC601

Q472

Q650

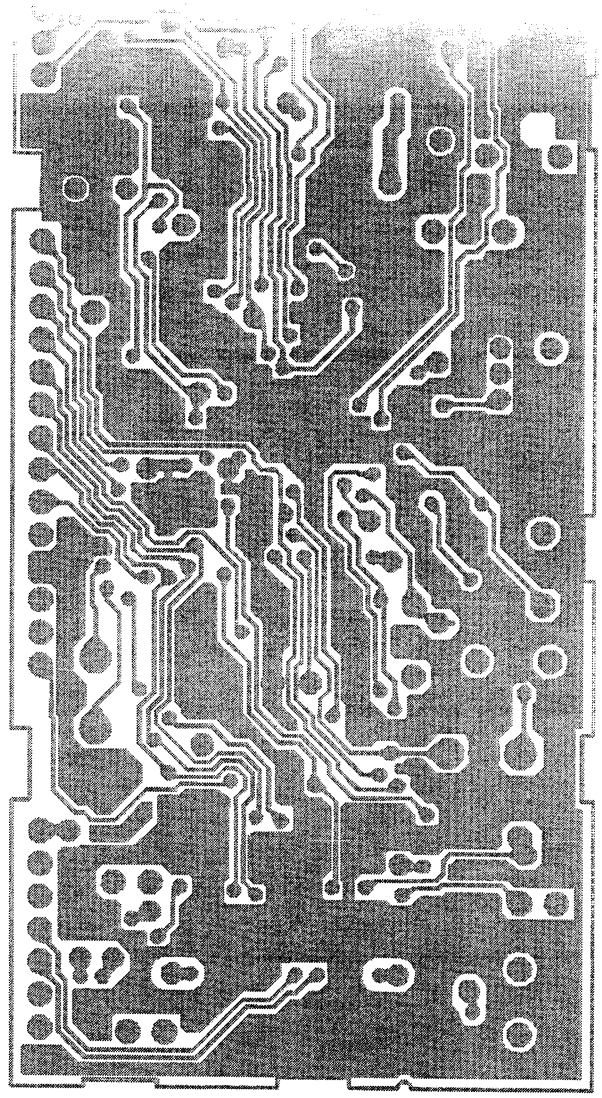
4.2 FM/AM TUNER UNIT

SIDE A



FM/AM TUNER UNIT

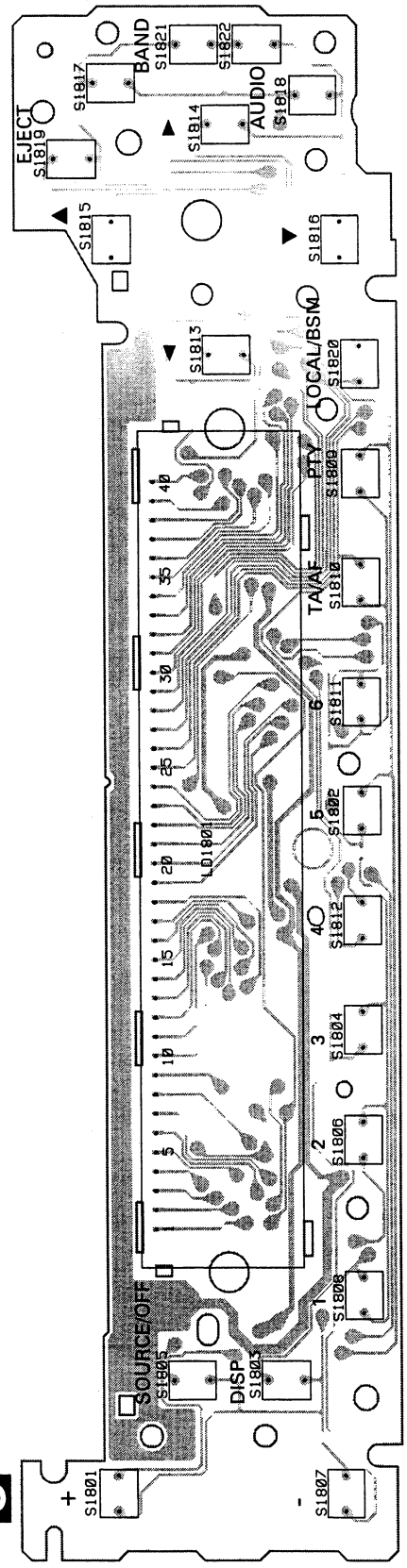
SIDE B



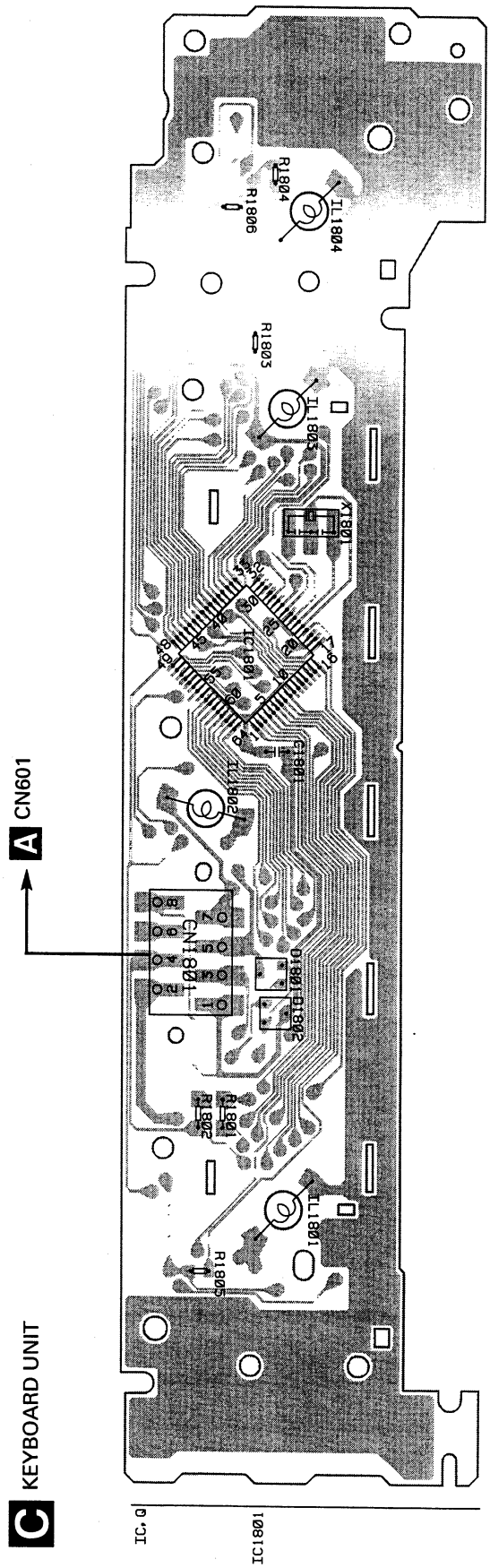
B FM/AM TUNER UNIT

4.3 KEYBOARD UNIT

SIDE A

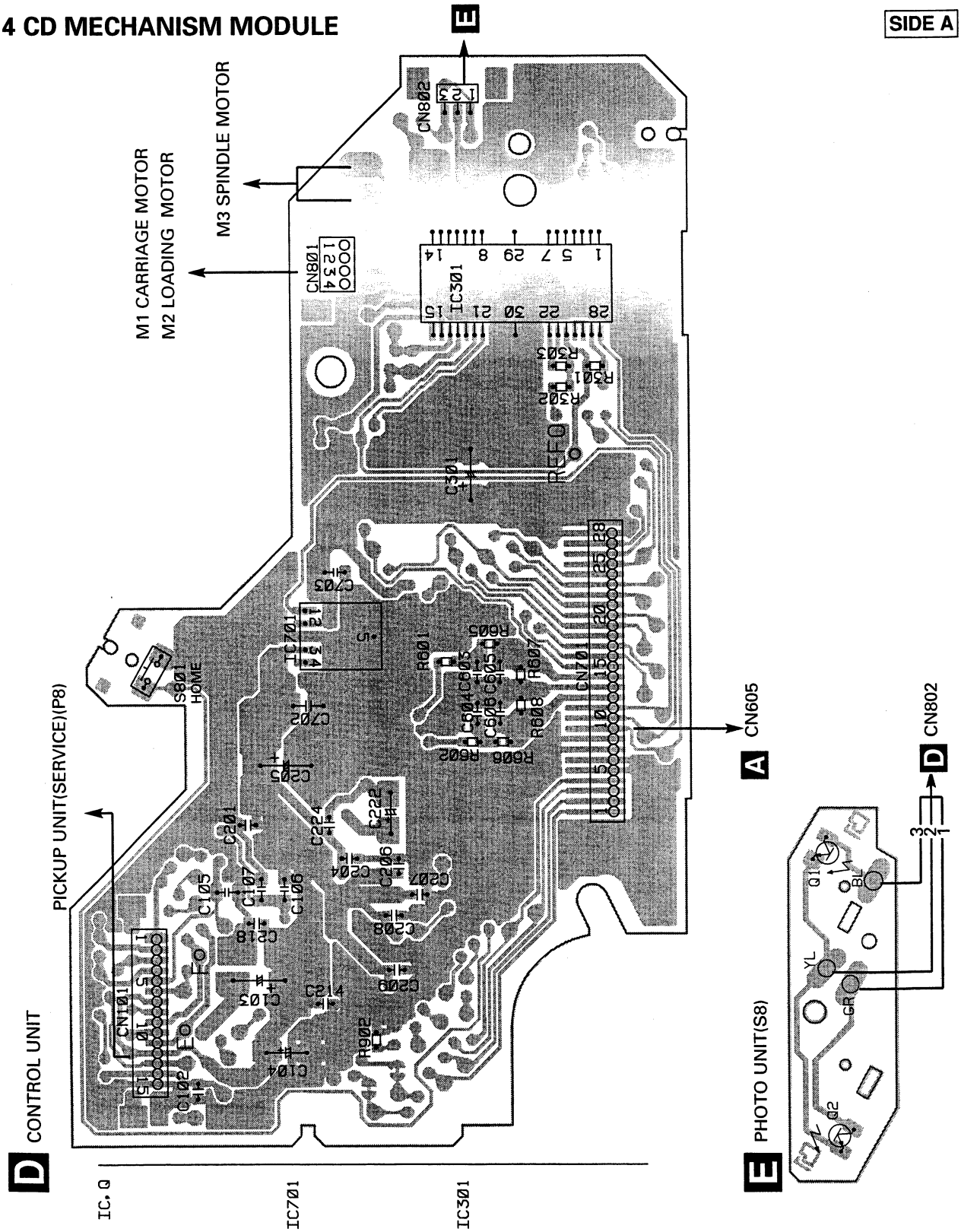


C KEYBOARD UNIT


SIDE B
A CN601
C KEYBOARD UNIT
R1804
R1806
TL1804
R1803
TL1803
X1801
IC1801
C1801
TL1802
CN1801
R1801
R1802
TL1801
R1805
IC1801

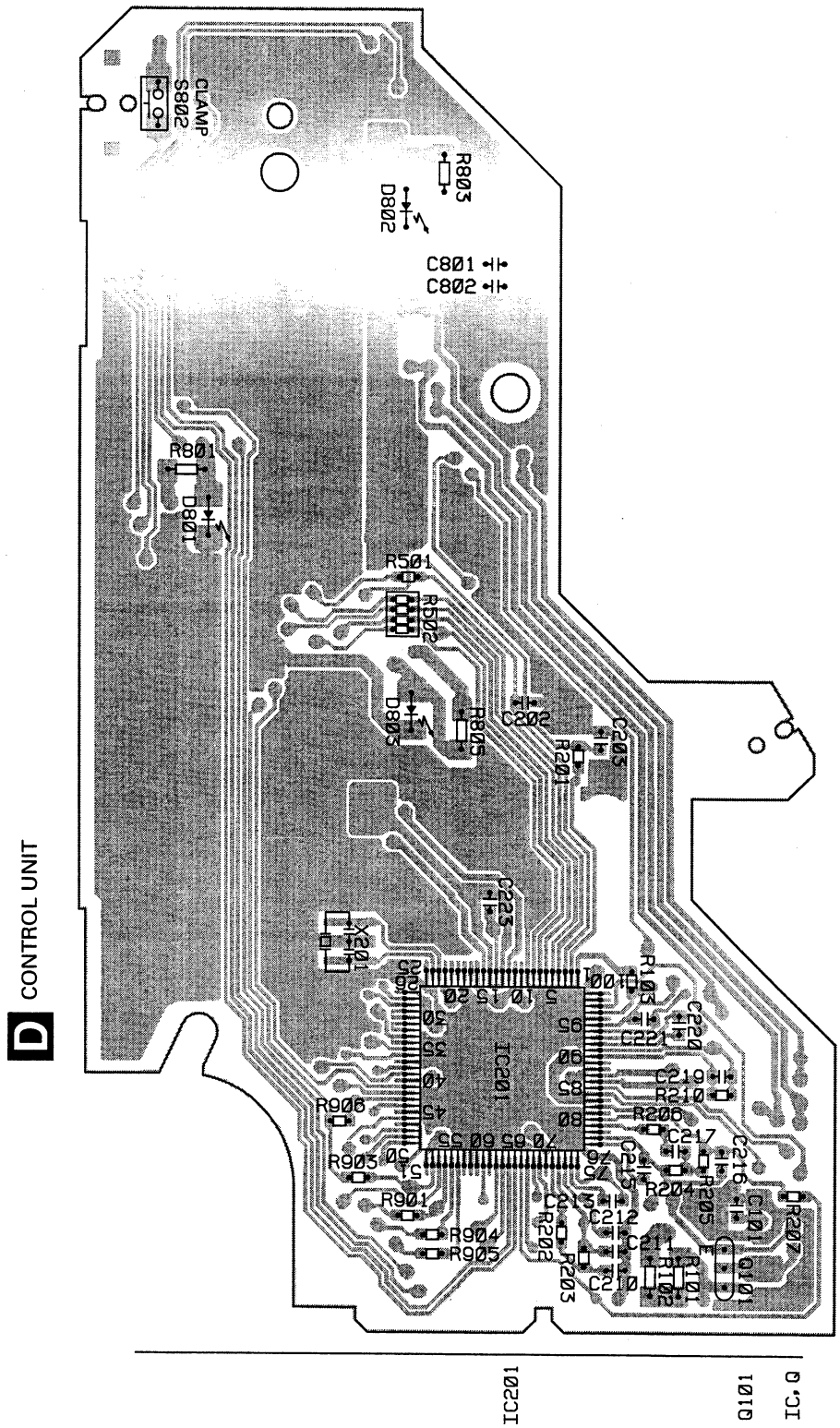
4.4 CD MECHANISM MODULE

SIDE A



D E

SIDE B


D CONTROL UNIT
CLAMP
S802
R803
D802
C801
C802
R801
D801
R501
R502
D803
R805
C202
C203
R201
C223
X201
IC201
R906
R903
R901
R904
R905
C220
C221
C219
R210
R206
C217
C216
R204
R205
C212
C213
C211
R202
R203
C210
R102
R101
C101
Q101
R207
IC201
Q101
IC, Q

5. ELECTRICAL PARTS LIST

NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

A Unit Number : CWM6764
Unit Name : Tuner Amp Assy

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	301	IC	SN761029DL
IC	302	IC	TDA7384
IC	601	IC	PE5090A
IC	602	IC	S-80834ANY
IC	701	IC	PM4009A
Q	346	Transistor	RN1610
Q	351	Transistor	DTC114EK
Q	353	Transistor	DTA124EK
Q	411	Transistor	2SC2412K
Q	412	Transistor	2SC2412K
Q	472	Transistor	RN1610
Q	474	Transistor	2SD1757K
Q	475	Transistor	2SD1757K
Q	476	Transistor	2SC2412K
Q	477	Transistor	DTA124EK
Q	650	Transistor	2SA1037K
Q	901	Transistor	2SC2412K
Q	902	Transistor	2SC2412K
Q	903	Transistor	2SD1859
Q	904	Transistor	2SD2396
Q	905	Transistor	2SB1243
Q	906	Transistor	DTC114EK
Q	941	Transistor	2SB1243
Q	942	Transistor	DTC114EK
Q	951	Transistor	2SA1037K
Q	981	Transistor	2SD2396
Q	982	Transistor	RN46A1
D	650	Diode	1SS270
D	651	Diode	1SS270
D	652	Diode	1SS270
D	653	Diode	1SS270
D	654	Diode	1SS270
D	655	Diode	1SS270
D	901	Diode	HZS7L(C2)
D	902	Diode	S5688G
D	903	Diode	S5688G
D	904	Diode	HZS7L(A1)
D	905	Diode	S5688G
D	906	Diode	HZS6L(B2)
D	907	Diode	HZS9L(B3)
D	941	Diode	S5688G
D	942	Diode	S5688G
D	951	Diode	1SS270
D	952	Diode	1SS270
D	981	Diode	HZS9L(B1)
L	401	Ferri-Inductor	LAU4R7K
L	402	Ferri-Inductor	LAU2R2K
L	403	Inductor	LAU100K
L	610	Ferri-Inductor	LAU101K
L	611	Ferri-Inductor	LAU2R2K
L	650	Ferri-Inductor	LAU2R2K
L	703	Inductor	LAU100K
L	704	Ferri-Inductor	LAU101K
L	901	Choke Coil 600μH	CTH1221
L	951	Ferri-Inductor	LAU2R2K
TH	601	Thermistor	CCX1031
X	610	Ceramic Resonator 4.194MHz	CSS1047
X	702	Crystal Resonator 3.648MHz	CSS1447
AR	946	Arrester	DSP-201M-S00B
		FM/AM Tuner Unit	CWE1500

RESISTORS

R	310		RD1/4PU222J
R	311		RD1/4PU222J
R	312		RS1/10S272J
R	313		RS1/10S272J
R	314		RS1/10S151J
R	315		RS1/10S151J
R	316		RS1/10S0R0J
R	317		RS1/10S121J
R	318		RD1/4PU104J
R	319		RD1/4PU104J
R	320		RS1/10S121J
R	321		RS1/10S101J
R	322		RS1/10S101J
R	342		RS1/8S821J
R	343		RS1/8S821J
R	344		RS1/10S223J
R	345		RS1/10S223J
R	352		RS1/10S103J
R	353		RS1/10S103J
R	354		RS1/10S331J
R	360		RD1/4PU153J
R	411		RS1/10S681J
R	412		RS1/10S681J
R	413		RS1/10S681J
R	414		RS1/10S103J
R	415		RS1/8S681J
R	416		RD1/4PU473J
R	417		RD1/4PU472J
R	418		RS1/10S473J
R	419		RS1/10S473J
R	420		RS1/10S473J
R	421		RS1/10S473J
R	422		RS1/10S473J
R	423		RS1/10S681J
R	424		RS1/10S681J
R	425		RS1/10S393J
R	426		RS1/10S681J
R	427		RS1/10S222J
R	428		RS1/10S222J
R	430		RS1/10S474J

=====Circuit Symbol and No.===Part Name			Part No.
R	431		RS1/10S153J
R	440		RS1/10S681J
R	441		RS1/10S102J
R	442		RS1/10S473J
R	443		RS1/10S681J
R	444		RS1/10S472J
R	445		RS1/8S473J
R	446		RS1/10S224J
R	447		RS1/10S0R0J
R	460		RS1/10S162J
R	461		RS1/10S162J
R	464		RS1/10S272J
R	465		RS1/10S272J
R	474		RS1/10S222J
R	475		RS1/10S223J
R	476		RS1/10S223J
R	477		RS1/10S222J
R	478		RD1/4PU224J
R	479		RS1/10S224J
R	611		RS1/10S102J
R	614		RS1/8S0R0J
R	619		RS1/10S0R0J
R	620		RN1/10SE2202D
R	622		RD1/4PU222J
R	623		RD1/4PU222J
R	624		RS1/10S473J
R	625		RS1/10S473J
R	626		RS1/10S473J
R	627		RD1/4PU473J
R	628		RD1/4PU222J
R	630		RS1/10S822J
R	649		RS1/8S222J
R	650		RS1/8S222J
R	651		RS1/8S222J
R	652		RS1/8S472J
R	653		RD1/4PU222J
R	654		RS1/10S473J
R	655		RS1/10S103J
R	656		RS1/10S103J
R	657		RD1/4PU102J
R	658		RD1/4PU102J
R	660		RS1/10S1R0J
R	681		RD1/4PU681J
R	682		RS1/10S102J
R	683		RD1/4PU102J
R	684		RS1/10S102J
R	699		RS1/10S0R0J
R	713		RS1/10S225J
R	717		RD1/4PU102J
R	721		RS1/10S102J
R	722		RS1/10S102J
R	723		RS1/10S102J
R	724		RS1/10S681J
R	725		RS1/10S0R0J
R	726		RS1/10S0R0J
R	727		RS1/8S0R0J
R	901		RS1/10S473J
R	902		RD1/4PU103J
R	903		RD1/4PU103J
R	904		RS1/10S473J
R	905		RS1/10S102J
R	906		RS1/10S473J
R	907		RS1/10S473J
R	908		RS1/10S472J
R	909		RD1/4PU103J

=====Circuit Symbol and No.===Part Name			Part No.
R	911		RS1/10S122J
R	912		RD1/4PU103J
R	914		RD1/4PU152J
R	916		RS1/10S221J
R	918		RS1/10S1R0J
R	941		RD1/4PU472J
R	942		RD1/4PU152J
R	951		RS1/10S153J
R	953		RS1/10S472J
R	954		RD1/4PU102J
R	955		RD1/4PU473J
R	981		RS1/10S472J
R	982		RS1/10S222J
R	983		RD1/4PU221J
R	984		RD1/4PU221J

CAPACITORS

C	310		CKSQYB105K16
C	311		CKSQYB104K16
C	312		CEJA2R2M50
C	313		CKSQYB105K16
C	314		CKSYB104K16
C	315		CKSQYB102K50
C	316		CKSQYB102K50
C	317		CEJA100M16
C	318		CEJA100M16
C	319		CKSQYB822K50
C	320		CKSQYB822K50
C	321		CEAL1R0M50
C	322		CEJA1R0M50
C	323		CKSQYB183K50
C	324		CKSQYB183K50
C	325		CKSQYB104K16
C	326		CKSQYB104K16
C	327		CKSQYB104K16
C	328		CKSQYB104K16
C	329		CEJA2R2M50
C	330		CEJA4R7M50
C	332		CKSQYB473K16
C	333		CKSQYB104K16
C	334		CKSQYB104K16
C	335		CEAL470M10
C	340		CEAL2R2M50
C	341		CEJA2R2M50
C	350		CEJA330M10
C	361		CEJA2R2M50
C	362		CKSYB225K16
C	363		CEJA100M16
C	364		CKSYB474K16
C	365		CKSQYB474K16
C	366		CKSYB474K16
C	367		CKSQYB474K16
C	368		CKSQYB474K16
C	369		CKSYB474K16
C	370		CKSQYB474K16
C	371		CKSYB474K16
C	372		CKSQYB225K10
C	390		CKSQYB104K16
C	391	3300µF/16V	CCH1368
C	411		CKSQYB223K25
C	412		CKSQYB223K25
C	413		CKSQYB102K50
C	414		CEJA220M10
C	415		CKSQYB473K16
C	416		CEAL101M10
C	417		CKSQYB472K50
C	418		CKSQYB472K50

=====Circuit Symbol and No.	===	Part Name	Part No.
C	441		CKSQYB182K50
C	442		CKSQYB223K25
C	462		CKSQYB123K25
C	463		CKSQYB123K25
C	466		CEJA1R0M50
C	467		CEJA1R0M50
C	490		CKSQYB103K50
C	493		CCSQCH100J50
C	612		CEJA4R7M35
C	613		CKSQYB473K16
C	614		CKSQYB102K50
C	621		CCSQCH101J50
C	630		CKSQYB473K16
C	631		CEAL2R2M50
C	650		CKSQYB104K16
C	711		CEAL220M6R3
C	712		CKSQYB104K16
C	714		CKSQYB471K50
C	715		CKSQYB104K16
C	718		CKSQYB471K50
C	719		CEAL220M6R3
C	720		CKSQYB104K16
C	725		CCSQCH270J50
C	726		CCSQCH270J50
C	901		CEJA101M10
C	902		CKSQYB473K16
C	903	470µF/16V	CCH1331
C	904		CKSQYB473K16
C	905	330µF/16V	CCH1326
C	906		CKSQYB103K50
C	907		CEJA101M16
C	941		CKSQYB473K16
C	981		CEJA101M10
C	982		CKSQYB102K50
C	983		CKSQYB473K16

B Unit Number : CWE1500
Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

IC	1	IC	PML002A
IC	2	IC	PM4008A
IC	3	IC	BR9010FV
Q	1	Transistor	2SC4081
Q	2	Transistor	DTC124EU
Q	3	FET	3SK263
Q	51	Transistor	2SC4081
Q	201	FET	2SK932
Q	202	Transistor	DTC124EU
Q	204	Transistor	2SC4081
D	1	Diode	KV1410(23)
D	2	Diode	1SV248
D	4	Diode	KV1410(23)
D	6	Diode	KV1410(23)
D	101	Diode	1SS355
D	201	Diode	DAN217U
D	202	Diode	DAN217U
D	903	Diode	KV1410(23)
D	904	Diode	SVC253
L	1	Coil	CTC1155
L	2	Coil	CTC1155
L	3	Inductor	LCTB100K2125
L	4	Coil	CTC1155
L	201	Inductor	LCTB330K1608
L	202	Inductor	CTF1287
L	203	Inductor	LCTA121J3225
L	901	Coil	CTC1154
L	902	Inductor	LCTA3R3J3225
L	904	Inductor	LCTBR47K1608
L	905	Inductor	LCTBR47K1608
T	51	Coil	CTE1132
CF	51	Ceramic Filter	CTF1442
CF	52	Ceramic Filter	CTF1442
CF	53	Ceramic Filter	CTF1442
CF	202	Ceramic Filter	CTF1348
X	901	Crystal Resonator 10.250MHz	CSS1432

RESISTORS

R	1	RS1/16S153J
R	2	RS1/16S103J
R	6	RS1/16S103J
R	7	RS1/16S273J
R	8	RS1/16S473J
R	9	RS1/16S223J
R	10	RS1/16S473J
R	11	RS1/16S221J
R	12	RS1/16S103J
R	13	RS1/16S104J
R	16	RS1/16S223J
R	17	RS1/16S221J
R	18	RS1/16S221J
R	19	RS1/16S473J
R	20	RS1/16S470J
R	51	RS1/16S470J
R	52	RS1/16S103J
R	53	RS1/16S103J
R	54	RS1/16S331J
R	55	RS1/16S331J
R	56	RS1/16S560J
R	57	RS1/16S560J
R	58	RS1/16S102J
R	59	RS1/16S225J
R	60	RS1/16S133J
R	61	RS1/16S433J
R	62	RS1/16S562J
R	101	RS1/16S333J
R	102	RS1/16S103J
R	103	RS1/16S333J
R	104	RS1/16S562J
R	106	RS1/16S0R0J
R	108	RS1/16S0R0J
R	110	RS1/16S154J
R	111	RS1/16S273J
R	112	RS1/16S223J
R	113	RS1/16S222J
R	114	RS1/16S333J
R	115	RS1/16S334J
R	116	RS1/16S473J
R	117	RS1/16S333J
R	118	RS1/16S223J
R	122	RS1/16S0R0J
R	202	RS1/16S472J
R	203	RS1/16S225J
R	204	RS1/16S102J
R	205	RS1/16S220J
R	206	RS1/16S471J
R	208	RS1/16S104J
R	209	RS1/16S104J
R	210	RS1/16S563J
R	213	RS1/16S223J
R	251	RS1/16S225J
R	902	RS1/16S103J
R	904	RS1/16S473J

=====Circuit Symbol and No.	Part Name	Part No.
R 907		RS1/16S103J
R 908		RS1/16S681J
R 909		RS1/16S473J
R 914		RS1/16S562J

CAPACITORS

C 1		CCSQCH5R0C50
C 2		CCSRCH5R0C50
C 4		CCSRCJ3R0C50
C 6		CKSQYB105K10
C 8		CKSRYB222K50
C 10		CCSRCH220J50
C 11		CCSRCH150J50
C 12		CCSRCH8R0D50
C 14		CCSRCJ3R0C50
C 15		CKSRYB103K50
C 16		CKSRYB222K50
C 17		CKSRYB222K50
C 18		CCSRCJ3R0C50
C 19		CKSRYB103K50
C 20		CKSRYB103K50
C 21		CKSRYB103K50
C 24		CKSQYB334K16
C 31		CKSRYB222K50
C 32		CCSRCH470J50
C 35		CKSRYB103K50
C 51		CKSRYB103K50
C 52		CKSRYB473K16
C 53		CCSRCK2R0C50
C 54		CKSRYB103K50
C 55		CKSRYB104K16
C 56		CKSRYB104K16
C 58		CKSQYB224K16
C 59		CKSRYB223K25
C 60		CKSRYB104K16
C 101		CEALNP100M10
C 102		CCSRCH151J50
C 103		CKSRYB473K16
C 105		CKSRYB682K25
C 106		CEAL2R2M50
C 107		CKSRYB103K50
C 108		CKSQYB474K16
C 109		CKSQYB474K16
C 110		CKSRYB104K16
C 111		CKSRYB104K16
C 112		CKSRYB104K16
C 113		CKSRYB123K25
C 114		CEAL220M6R3
C 115		CKSRYB473K16
C 116		CEAL2R2M50
C 117		CKSRYB102K50
C 120		CKSRYB153K25
C 121		CKSRYB332K50
C 122		CKSRYB682K25
C 123		CKSRYB681K50
C 125		CKSRYB103K50
C 126		CKSRYB103K50
C 127		CEAL2R2M50
C 128		CKSRYB103K50
C 201		CCSRCH471J50
C 202		CCSRCH100D50
C 203		CKSRYB104K16
C 204		CKSRYB332K50
C 205		CKSRYB103K50
C 206		CKSRYB104K16
C 207		CKSRYB473K16

=====Circuit Symbol and No.	Part Name	Part No.
C 208		CCSRCH560J50
C 209		CEAL470M6R3
C 210		CKSRYB103K50
C 211		CKSRYB103K50
C 212		CCSRCH101J50
C 215		CKSRYB223K25
C 216		CKSQYB334K16
C 217		CKSRYB103K50
C 219		CKSQYB105K10
C 220		CKSRYB104K16
C 221		CKSRYB473K16
C 222		CKSQYB334K16
C 223		CKSQYB474K16
C 224		CKSRYB104K16
C 225		CKSRYB272K50
C 226		CKSRYB682K25
C 902		CCSRCH270J50
C 904		CKSRYB223K25
C 905		CKSRYB103K50
C 906		CCSRTH100D50
C 907		CCSRTH150J50
C 909		CCSRTH100D50
C 910		CKSRYB332K50
C 912		CKSQYB474K16
C 913		CKSRYB223K25
C 914		CKSRYB682K25
C 915		CKSQYB223K25
C 916		CKSQYB474K16
C 917		CKSYB475K10
C 918		CKSRYB223K25
C 919		CKSQYB225K10
C 920		CCSRCH270J50
C 921		CCSRCH270J50
C 922		CKSYB105K16
C 923		CKSRYB103K50

C Unit Number : CWM6779(DEH-2130R)
: CWM6778(DEH-2100R)
Unit Name : Keyboard Unit

MISCELLANEOUS

IC 1801	IC		PD6293A
D 1801	Diode		MA152WK
D 1802	Diode		MA152WA
X 1801	Ceramic Resonator 4.97MHz		CSS1422
IL 1801	Lamp 14V 40mA	(DEH-2130R)	CEL1638
IL 1801	Lamp 14V 40mA	(DEH-2100R)	CEL1547
IL 1802	Lamp 14V 40mA	(DEH-2130R)	CEL1638
IL 1802	Lamp 14V 40mA	(DEH-2100R)	CEL1547
IL 1803	Lamp 14V 40mA	(DEH-2130R)	CEL1638
IL 1803	Lamp 14V 40mA	(DEH-2100R)	CEL1547
IL 1804	Lamp 14V 40mA	(DEH-2130R)	CEL1638
IL 1804	Lamp 14V 40mA	(DEH-2100R)	CEL1547
LCD1801	LCD		CAW1559

RESISTORS

R 1801		RS1/8S222J
R 1802		RS1/8S222J
R 1803		RS1/10S471J
R 1804		RS1/10S471J
R 1805		RS1/10S471J
R 1806		RS1/10S471J

CAPACITORS

C 1801		CKSQYB103K25

D Unit Number : CWX2411
Unit Name : Control Unit

MISCELLANEOUS

IC	201	IC	UPD63711GC
IC	301	IC	BA5985FM
IC	701	IC	BA05SFP
Q	101	Transistor	2SB1132
D	801	LED	CL200IRX
D	802	LED	CL200IRX
X	201	Ceramic Oscillator 16.934MHz	CSS1456
S	801	Spring Switch(HOME)	CSN1051
S	802	Spring Switch(CLAMP)	CSN1052

RESISTORS

R	101		RS1/8S120J
R	102		RS1/8S100J
R	103		RS1/16S222J
R	201		RS1/16S104J
R	202		RS1/16S103J
R	203		RS1/16S393J
R	204		RS1/16S103J
R	205		RS1/16S103J
R	206		RS1/16S182J
R	207		RS1/16S123J
R	302		RS1/16S153J
R	303		RS1/16S103J
R	501		RS1/16S102J
R	502		RA4C681J
R	601		RS1/16S102J
R	602		RS1/16S102J
R	605		RS1/16S0R0J
R	606		RS1/16S0R0J
R	801		RS1/8S751J
R	803		RS1/8S751J
R	902		RS1/16S0R0J
R	906		RS1/16S0R0J

CAPACITORS

C	101		CCSRCH102J25
C	102		CKSRYB104K16
C	103		CEV101M6R3
C	104		CEV470M6R3
C	105		CKSQYB334K16
C	106		CKSQYB334K16
C	107		CKSQYB334K16
C	201		CKSRYB104K16
C	202		CKSRYB471K50
C	203		CKSRYB104K16
C	205		CEV101M6R3
C	206		CKSRYB104K16
C	207		CKSRYB104K16
C	208		CKSRYB104K16
C	209		CKSRYB104K16
C	210		CKSRYB332K50
C	211		CKSRYB104K16
C	212		CKSRYB104K16
C	213		CKSRYB392K50
C	214		CKSRYB104K16
C	215		CKSRYB104K16
C	216		CCSRCJ3R0C50
C	217		CCSRCH270J50
C	218		CKSRYB104K16
C	219		CCSRCH181J50
C	220		CCSRCH510J50
C	221		CKSRYB682K25
C	222		CEV220M6R3
C	223		CKSRYB103K25
C	224		CKSRYB224K10
C	301		CEV101M10
C	603		CCSQSL152J50
C	604		CCSQSL152J50
C	702	10μF/10V	CCH1349
C	703		CKSQYB334K16

E Unit Number :
Unit Name : Photo Unit(S8)

Q	1	Photo-transistor	CPT230SX-TU
Q	2	Photo-transistor	CPT230SX-TU

Miscellaneous Parts List

		Pickup Unit(Service)(P8)	CXX1285
M	1	Motor Unit(CARRIAGE)	CXB2190
M	2	Motor Unit(LOADING)	CXB2195
M	3	Motor Unit(SPINDLE)	CXB2562
		Fuse(10A)	CEK1136

6. ADJUSTMENT

6.1 CD ADJUSTMENT

1) Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.
  If REFO and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.
  Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.
  Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.
  If by accident REFO comes in contact with GND, immediately switch the regulator or power OFF.

- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

- Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.

- Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.
  *During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.
  *The unit will not load a disc.
  When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.

2) Test Mode

This mode is used for adjusting the CD mechanism module of the device.

- Test mode starting procedure
  Reset while pressing the **4** and **6** keys together.

- Test mode cancellation
  Switch ACC, back-up OFF.

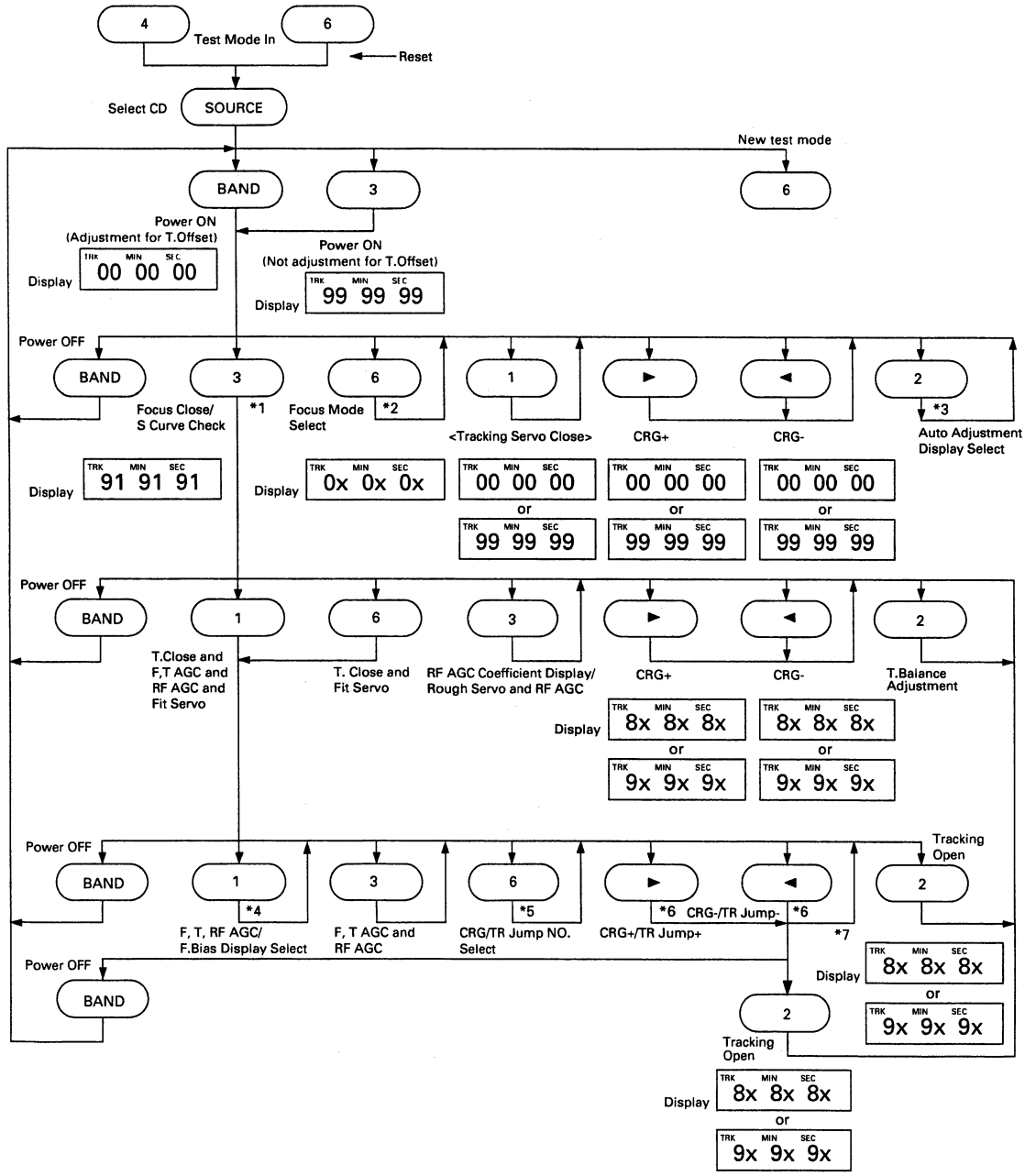
- After pressing the EJECT key, do not press any other key until the disk is completely ejected.

- If the ► or ◄ key is pressed while focus search is in progress, immediately turn the power off (otherwise the actuator may be damaged due to adhesion of the lenses).

- Jump operation of TRs other than 100TR continues after releasing the key. CRG move and 100TR jump operations are brought into the "Tracking close" status when the key is released.

- Powering Off/On resets the jump mode to "1TR", and the automatic adjustment value to the initial value.

● Flow Chart



*1 "00", "99"→Focus Close / "01"→S.Curve

*2 → Focus Close 00(99) → S.Curve 01 → LD Off 02

*3 → F.Cancel → T.Offset → The original display

*4 → TRK, MIN, SEC → F.AGC Gain → T.AGC Gain → F.Bias

*5 → 1TR 91(81) → 4TR 92(82) → 10TR 93(83) → 32TR 94(84) → 100TR 95(85) → CRG Move 96(86)

*6 1TR/4TR/10TR/32TR/100TR

*7 CRG Move,100TR Jump

6.2 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

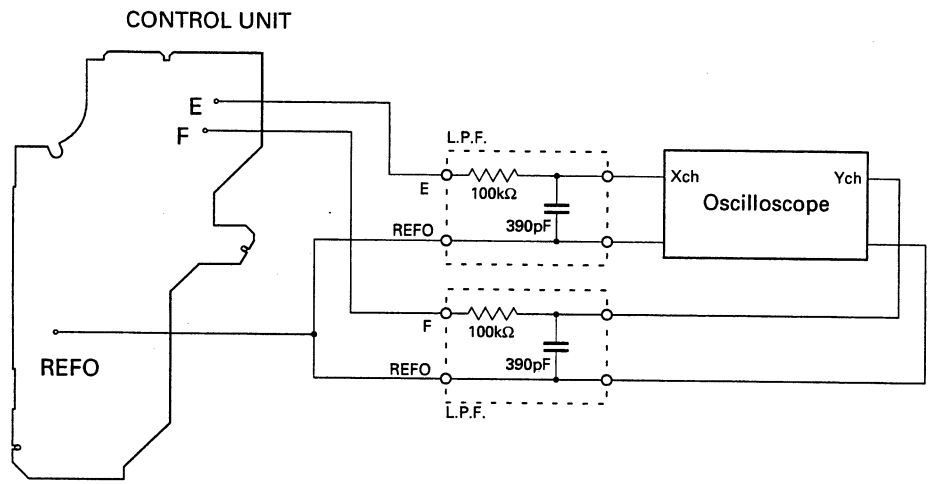
• **Note :**
The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

• **Purpose :**
To check that the grating is within an acceptable range when the PU unit is changed.

• **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

• **Method :**

• Measuring Equipment	• Oscilloscope, Two L.P.F.
• Measuring Points	• E, F, REFOUT
• Disc	• ABEX TCD-784
• Mode	• TEST MODE



• **Checking Procedure**
1. In test mode, load the disc and switch the 5V regulator on.
2. Using the ► and ◄ buttons, move the PU unit to the innermost track.
3. Press key **3** to close focus, the display should read "91". Press key **2** to implement the tracking balance adjustment the display should now read "81". Press key **3** 2 times. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

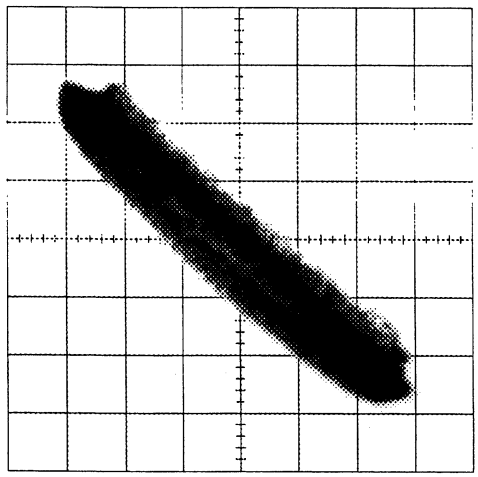
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

• **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

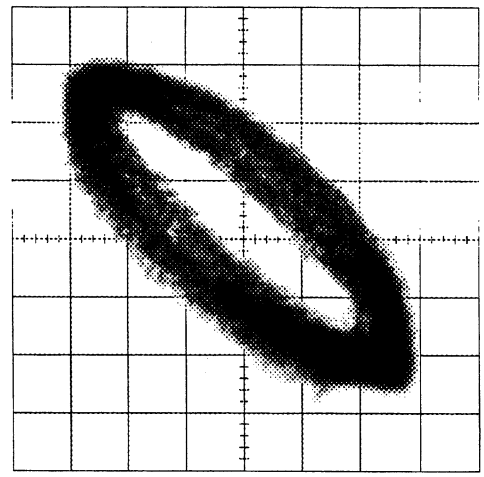
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

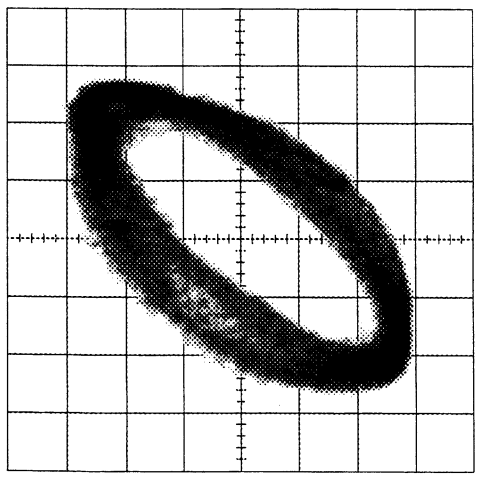
0°



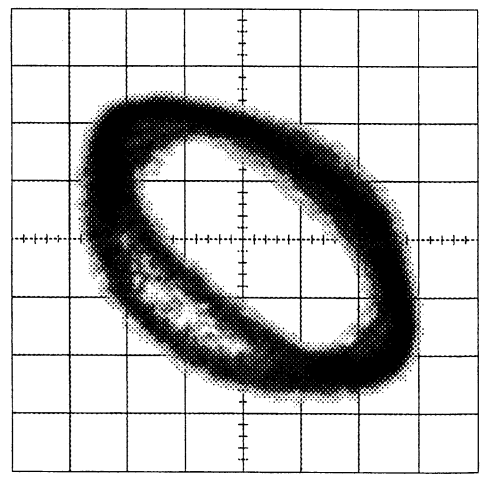
30°



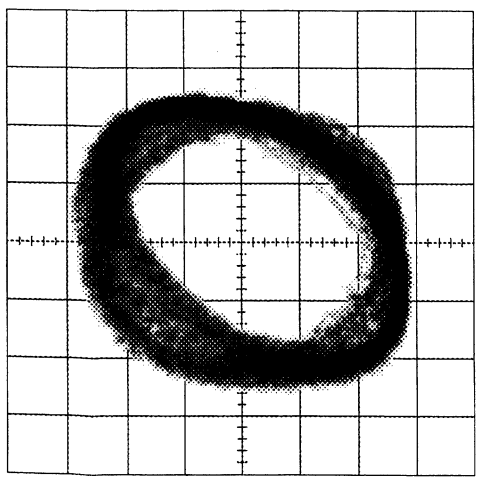
45°



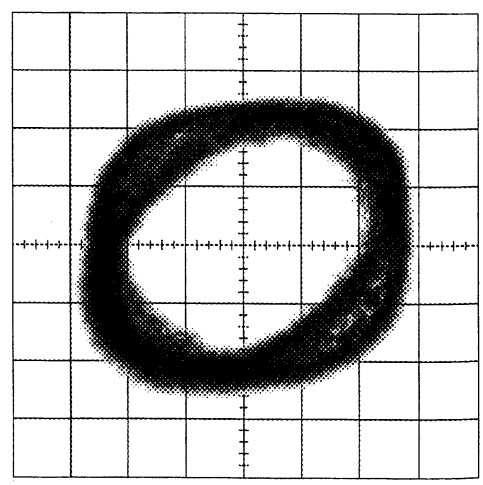
60°



75°



90°



7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 TEST MODE

● Error Messages

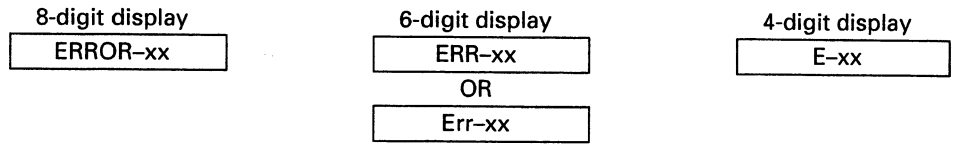
If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.



(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. → Failure on home switch or CRG move mechanism.
11	Electricity	Focus Servo NG	Focusing not available. → Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG	Spindle not locked. Sub-code is strange (not readable). → Failure on spindle, stains or damages on disc, or excessive vibrations.
		Subcode NG	A disc not containing CD-R data is found. Turned over disc are found, though rarely. → Failure on home switch or CRG move mechanism.
		RF AMP NG	An appropriate RF AMP gain can't be determined. → CD signal error.
17	Electricity	Setup NG	APC protection doesn't work. Focus can be easily lost. → Damages or stains on disc, or excessive vibrations.
30	Electricity	Search Time Out	Failed to reach target address. → CRG tracking error or damages on disc.
A0	System	Power Supply NG	Power (VD) is ground faulted. → Failure on SW transistor or power supply (failure on connector).

Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).
Unreadable TOC does not constitute an error. An intended operation continues in this case.
A newly designed head unit must conform to the example given above.
Upper digits of an error code are subdivided as shown below:
1x: Setup relevant errors, 3x: Search relevant errors, 3x: Search relevant errors, Ax: Other errors.

● New Test Mode

S-CD plays the same way as before.

If an error such as off focus, spindle unlocking, unreadable sub-code, or sound skipping occurs after setup, its cause and time occurred (in absolute time) are displayed.

During setup, operational status of the control software (internal RAM: CPOINT) is displayed.

These displays and functions are prepared for enhancing aging in the servicing and efficiency of trouble analysis.

(1) Shifting to the New Test Mode

① Turn on the current test mode by starting the reset from the key.

② Select S-CD for the source through the specified procedure including use of the [SOURCE] key, and inserting the disc. Then, press the [Jump Mode Selector] key while maintaining the regulator turned off.

③ After the above operations, the new test mode remains on irrespective of whether the S-CD is turned on or off. You can reset the new test mode by turning on the reset start.

* With some products, the new test mode can be reset through the same operations as that employed for shifting to the STBY mode (while maintaining the Acc turned off).

(2) Key Correspondence

Key	Test mode		New test mode	
(Example)	Power Off	Power On	In-play	Error Production
BAND	To power on (offset adjustment performed)	To power off	–	Time/Err.No. switching
►	–	FWD-Kick	FF/TR+	–
◄	–	REV-Kick	REV/TR-	–
1	–	T.Close (AGC performed) /parameter display switching	Scan	–
2	–	T.BAL adjustment /T.Open	Mode	–
3	To power on (offset adjustment not performed)	F.Close/RF AGC/AGC	–	–
6	–	Mode switching /T.Close (no AGC)/Jump switching	Auto/Manu	–

Note: Eject and CD on/off is performed in the same procedure as that for the normal mode.

(3) Cause of Error and Error Code

Code	Class	Contents	Description and cause
40	Electricity	Off focus detected.	FOK goes low. → Damages/stains on disc, vibrations or failure on servo.
41	Electricity	Spindle unlocked.	FOK = Low continued for 50 msec. → Damages/stains on disc, vibrations or failure on servo.
42	Electricity	Sub-code unreadable.	Sub-code was unreadable for 50 msec. → Damages/stains on disc, vibrations or failure on servo.
43	Electricity	Sound skipping detected.	Last address memory function was activated. → Damages/stains on disc, vibrations or failure on servo.

Note: Mechanical errors during aging are not displayed.
The error codes should be indicated in the same way as in the normal mode.

(4) Display of Operational Status (CPOINT) during Setup

Status No.	Contents	Protective action
01	Carriage move to home position started.	None
02	Carriage is moving toward inner diameter.	Specified 10 seconds has been passed or failure on home switch.
03	Carriage is moving toward outer diameter.	Specified 10 seconds has been passed or failure on home switch.
05	Carriage outer diameter feed (1 second) in progress.	None
11	Setup started.	None
12	Spindle rotation and focus search started.	None
13	Waiting for focus close (XSI=Low).	Specified focus search time has been passed.
14	Waiting for focus close (FOK=High). (After AGC)	Specified focus search time has been passed.
15	Waiting for focus close (FOK=High). (Before AGC)	Specified focus search time has been passed.
16	Rough AGC in progress.	Off focus.
17	Setup (1/2) before T balance adjustment is started.	Off focus.
18	Setup (2/2) before T balance adjustment is started.	Off focus.
24	T balance adjustment (1/2).	Off focus.
25	T balance adjustment (2/2).	Off focus.
26	Standing by after spindle rough servo is over.	Off focus.
27	Setup before RF AGC (first) is started.	Off focus.
28	RF AGC (first) in progress.	Off focus.
29	Setup before RF AGC (second) is started.	Off focus.
30	RF AGC (second) in progress.	Off focus.
31	Tracking close in progress.	Off focus.
32	Standing by after tracking is closed.	Off focus.
33	Focus AGC started.	Off focus.
34	Focus AGC in progress. Tracking AGC started.	Off focus.
35	Tracking AGC in progress. Spindle processes applicable servo.	Off focus.
36	Check of MIRR and LOCK pin. RF AGC in progress. CRG close in progress. Check of sub-code.	Off focus. Spindle not locked. Sub-code unreadable.

(5) Display Examples

1) During Setup (When status no. = 11)

TRK No.	MIN.	SEC.
11	11'	11"

2) During Operation (TOC read, TRK search, Play, FF and REV)

The same as in the normal mode.

3) When a Protection Error Occurred

Switch to the following displays (A) and (B) using the [BAND] switch:

(A) Error occurrence timing display in absolute time.

An example: Error occurred in 12th tune at 34'56" in absolute time.

TRK No.	MIN.	SEC.
12	34'	56"

(B) Error No. display

An example: Error #40 (Off focus is detected)

ERROR-40

7.1.2 DISASSEMBLY

● **Removing the Upper Case (not shown)**

● **Removing the CD Mechanism Module (Fig.1)**

1 Remove the four screws.

Disconnect the connector and then remove the CD Mechanism Module (not shown).

● **Removing the Panel Assy (not shown)**

1. Disconnect the two stoppers and then remove the Panel Assy.

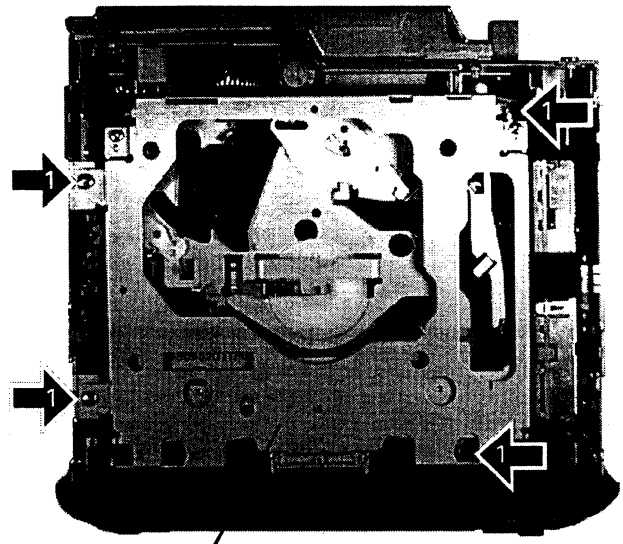


Fig.1

● **Removing the Tuner Amp Assy**

1 Remove the two screws (Fig.2).

2 Remove the three screws and then remove the Cover (Fig.2).

3 Remove the screw (Fig.3).

4 Disconnect the four claws and then remove the Tuner Amp Assy (Fig.3).

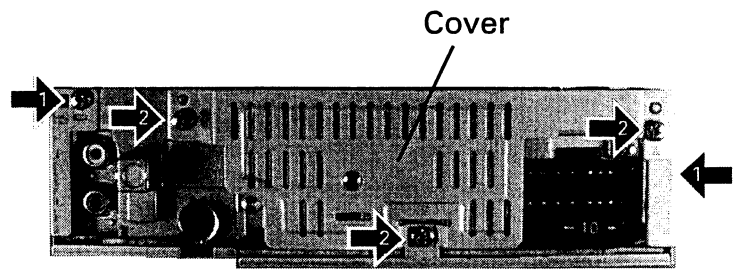


Fig.2

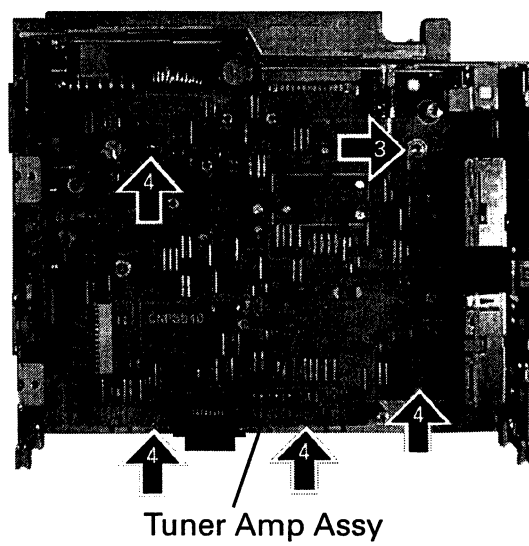
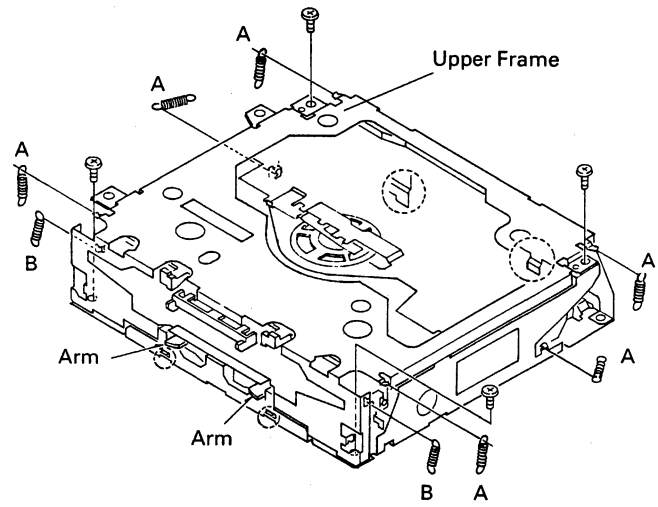


Fig.3

● Removing the Upper Frame

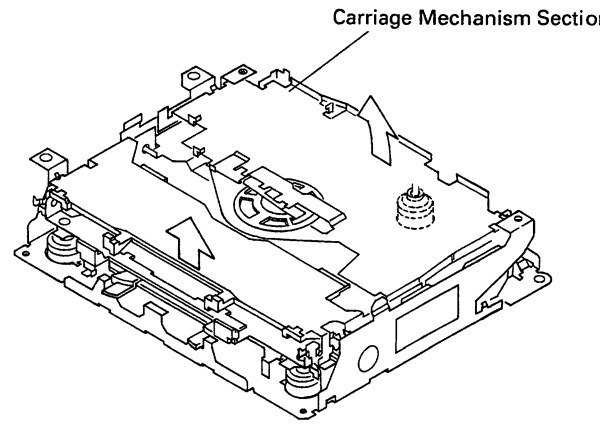
1. Remove six Springs A, two Springs B and four Screws.
2. Remove two Tabs situated on rear side of the Upper Frame, remove two Arms on the front side, then remove two Tabs on the front side.



● Removing the Carriage Mechanism

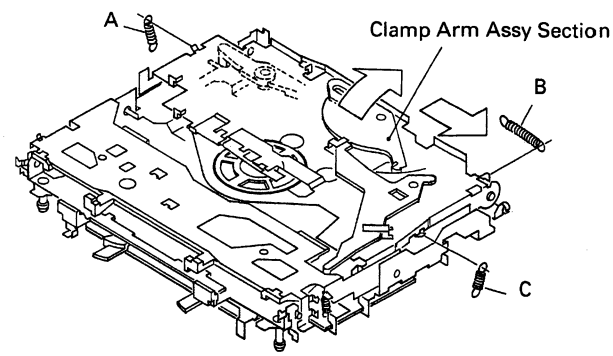
1. Disengage the Carriage Mechanism from the two dampers situated in the front side by driving it up, then disengage and remove the mechanism from the one damper by driving it up aslant into front side direction.

Note : When assembling the Carriage Mechanism, coat the dampers with alcohol prior to the assembly.



● Removing the Clamp Arm Assy

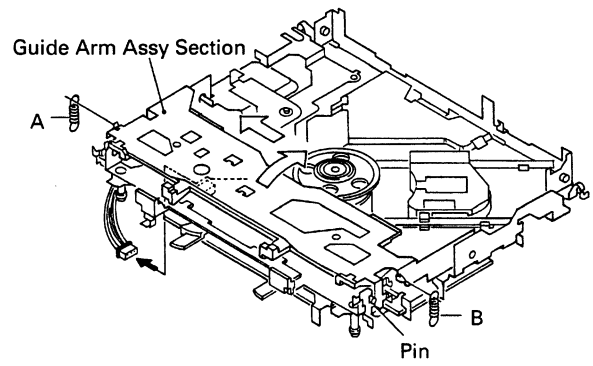
1. Remove a Spring A, a B and a Spring C.
2. Drive the Clamp Arm Assy up into rear side direction, then disengage the arm from its current position Finally, drive the assembly approximately 45 degrees upward, then slide the assembly toward right side to remove it.



● Removing the Guide Arm Assy

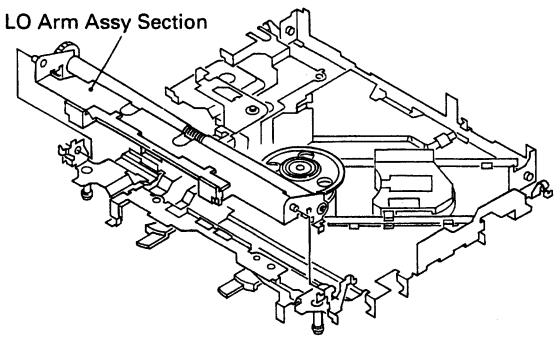
1. Remove a connector, a spring A and B
2. Drive the Guide Arm Assy up aslant into rear side direction, then remove it from a Pin. Finally, drive the assembly approximately 45 degrees upward, then slide the assembly toward left side to remove it.

Note : When assembling the guide arm assembly, route the cord inside the assembly. In this operation, care must be exercised so that cord may be caught by the gear.



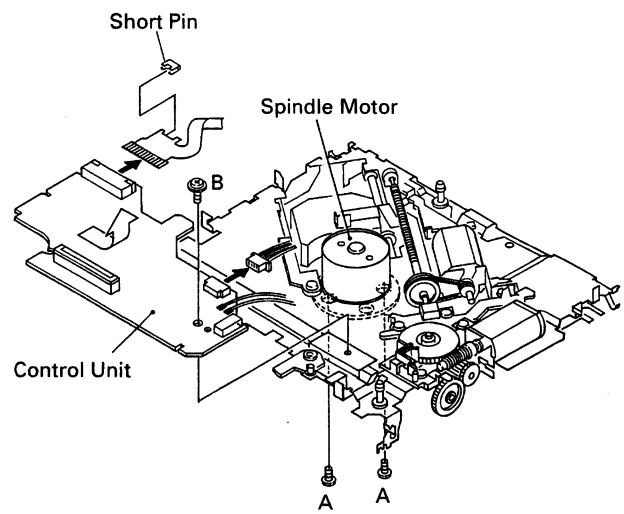
● Removing the LO Arm Assy

1. Remove two Pins to dismount the LO Arm Assy.



● Removing the Control Unit and the Spindle Motor

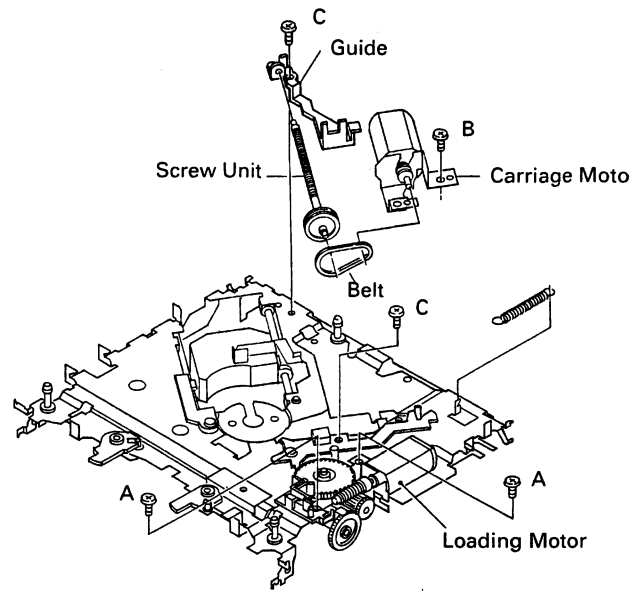
1. Remove from the connector after mounting the short pin on the flexible PCB of the pickup unit.
2. Remove two Soldered joints, then remove two Screws A.
3. Remove two connectors and a Screw B.
4. Disengage the Control Unit from two Tabs, then dismount the unit by sliding it toward left.
5. Dismount the Spindle Motor.



● Removing the Loading Motor and Carriage Motor

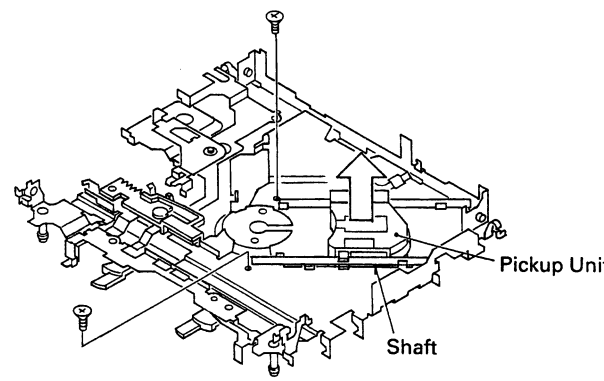
1. Remove the Spring and two Screws A.
2. Dismount the Loading Motor.
3. Remove the Belt, a Screw B, two Screws C, a Guide and a Screw Unit.
4. Dismount the Carriage Motor.

Note : When assembling the Belt, use care so that it may not be contaminated by grease.



● Removing the Pickup Unit

1. Remove two Screws and a Shaft.
2. Dismount the Pickup Unit.



7.2 PARTS

7.2.1 IC

● **Pin Functions(PE5090A)**

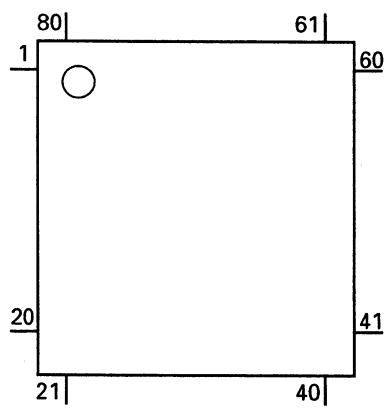
Pin No.	Pin Name	I/O	Format	Function and Operation
1	MODEL1	I		Model select input
2	NL1	I		Noise level input
3	NL2DT	I		Noise level input 2
4	AVSS			A/D GND
5	ST	I		Stereo input
6	SD	I		SD signal input
7	AREF1			(D/A converter standard voltage)
8	KYDT	I		Key data input
9	DPDT	O	C	Key data output
10	SDBW	I		SDBW input
11	TUNPDI	I		PLL IC data input
12	TUNPDO	O	C	PLL IC data output
13	TUNPCK	O	C	PLL IC clock output
14	TUNPCE	O	C	PLL IC chip enable output
15	CURRQ	O	C	Tuner voltage FIX output
16	XSI	I	C	LSI data input
17	XSO	O	C	LSI data output
18	XSCK	O	C	LSI clock output
19	DRST	O	C	RDS decoder reset output
20	ADPW	O	C	A/D converter power output
21	FM/AM	O	C	FM/AM power select output
22	VDCONT	O	C	VD power control output
23	CONT	O	C	Servo driver power control output
24	XAO	O	C	CD LSI data discernment control signal output
25	XRST	O	C	CD LSI reset output
26	XSTB	O	C	CD LSI strobe output
27	CLAMP	I		Disc clamp sense input
28	MIRR	I		Mirror detection input
29	FOK	I		Focus OK signal input
30	LOCK	I		Spindle lock detector input
31	CDLOAD	O	C	LOAD motor loading control output
32	TELIN	I		Cellular mute input
33	VSS			GND
34	CDEJECT	O		LOAD motor eject control output
35	CD5VON	O	C	CD +5V power supply control output
36–39	NC			Not used
40	RECIEVE	O	C	RDS decoder receiving output
41	SWVDD	O	C	Grille power supply control output
42	SYSPW	O	C	System power supply control output
43	NC			Not used
44	MUTE	O	C	Mute output
45	PEE	O	C	Beep tone output
46	LOCH	O	C	LOCH output
47	RDS57K	I		57kHzBP-OUT sense input
48	TUNPCE2	O	C	EEPROM chip enable output 2
49	NC			Not used
50	VCK	O	C	Clock output for electronic volume
51	VDT	O	C	Data output for electronic volume
52	ANTPW	O	C	Antenna power output
53	VST	O	C	Strobe pulse output for electronic volume
54–57	DEQ4-1	O	C	Direct EQ data output 4-1
58	RDSLK	I		RDS LK signal input
59	RDT	I		RDS data input
60	RESET			Reset

Pin No.	Pin Name	I/O	Format	Function and Operation
61	LDET	I		PLL lock sense input
62	RCK	I		RDS clock input
63	ASENS	I		ACC power sense input
64	BSENS	I		Back up power sense input
65	DSENS	I		Grille detach sense input
66	TMUTE	O	C	Tuner mute output
67	LOCL	O	C	LOC L output
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			GND
72	NC			Not used
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			GND
76	SL	I		Signal level input
77	TEMP	I		Temperature detector input
78	VDSENS	I		Over voltage sense input
79	DSCSNS	I		Disc detect input
80	EJTSNS	I		Disc EJECT position detect input

Output Format	Meaning
C	C MOS output

IC's marked by* are MOS type.
Be careful in handing them because they are very liable to be damaged by electrostatic induction.

*PE5090A



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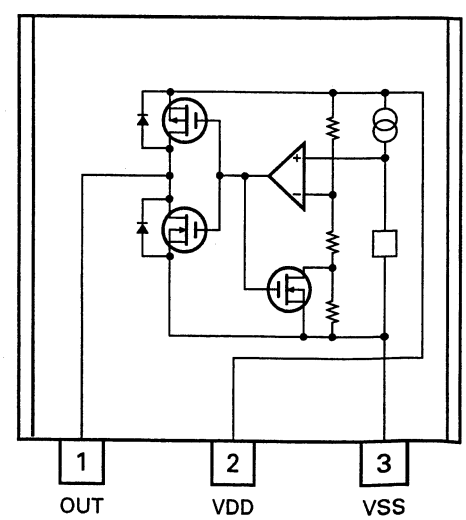

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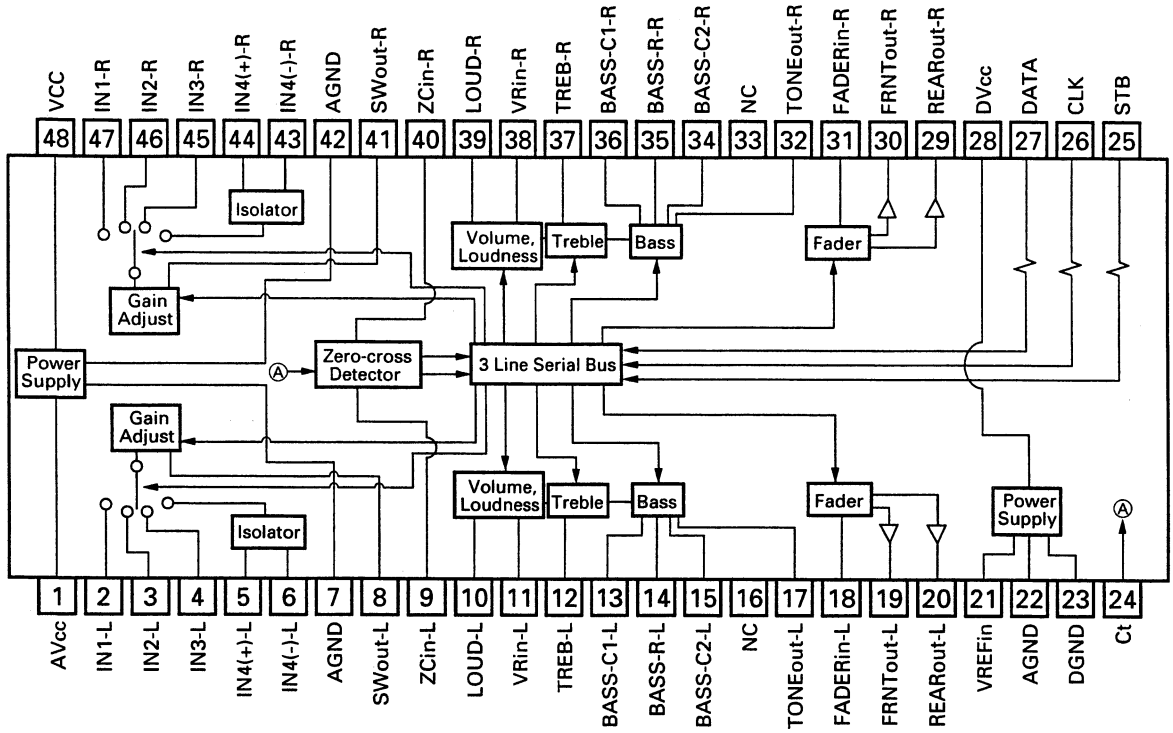

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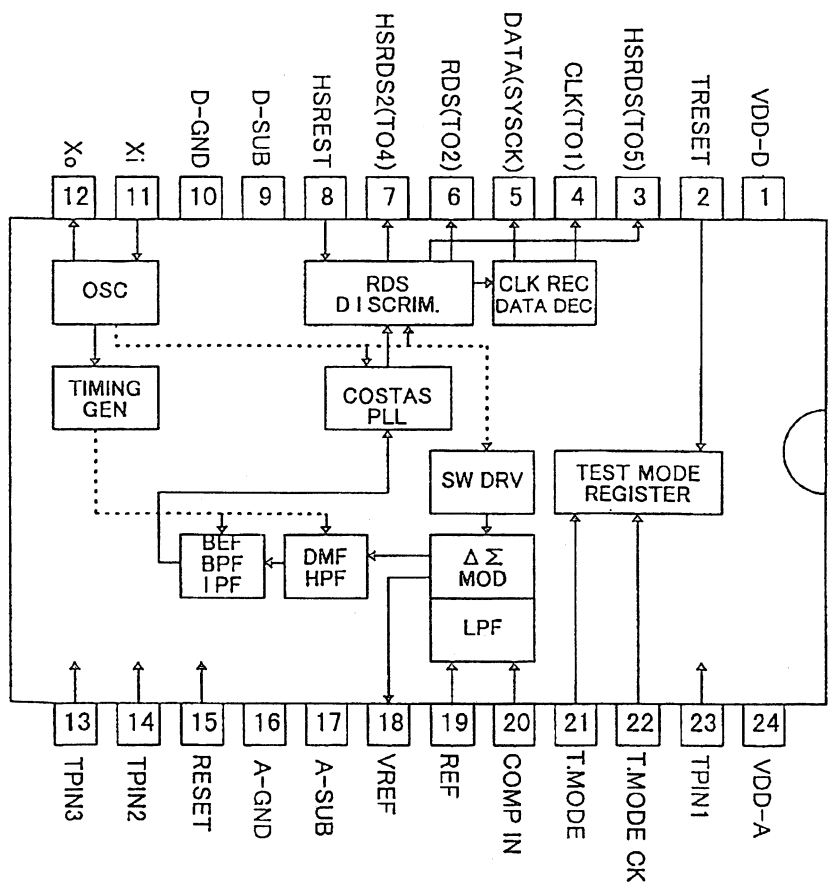
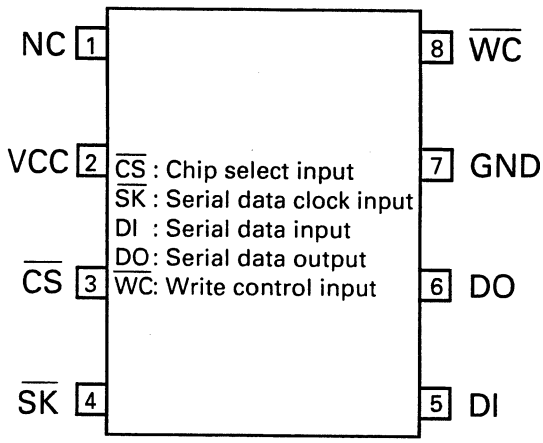


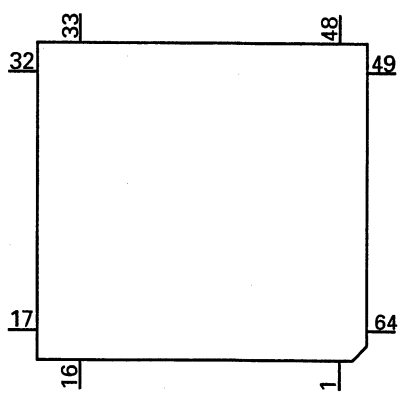
BR9010FV



● **Pin Functions (PD6293A)**

Pin No.	Pin Name	I/O	Function and Operation
1-5	SEG4-0	O	LCD segment output
6-9	COM3-0	O	LCD common output
10	VLCD		LCD drive power supply
11-14	KST3-0	O	Key strobe output
15,16	KDT0,1	I	Key data input (analogue input)
17	REM	I	Remote control reception
18	DPDT	I	Display data input
19	NC		Not used
20	KYDT	O	Key data output
21	MODA		GND
22	X0		Crystal oscillator connection pin
23	X1		Crystal oscillator connection pin
24	VSS		GND
25,26	KDT2,3	I	Key data input
27	NC		Not used
28	KST4	O	Key strobe output
29-32	NC		Not used
33-55	SEG35-13	O	LCD segment output
56	VDD		Power supply
57-64	SEG12-5	O	LCD segment output

*PD6293A

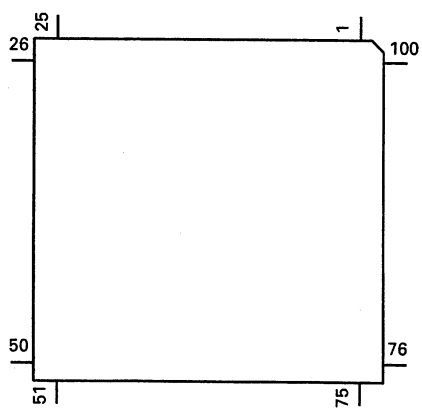


● **Pin Functions (UPD63711GC)**

Pin No.	Pin Name	I/O	Function and Operation
1	D.GND		Logic circuit GND
2	RFOK	O	RFOK signal output
3	$\overline{RST}$	I	Reset signal input
4	A0	I	Command/parameter identification signal input
5	$\overline{STB}$	I	Data strobe signal input
6	$\overline{SCK}$	I	Clock signal input for serial data input/output
7	SO	O	Serial data and status signal output
8	SI	I	Serial data input
9	$\overline{XTALEN}$	I	Crystal oscillation control pin
10	D.VDD		Positive power supply terminal to logic circuit
11	DA.VDD		Positive power supply terminal to D/A converter
12	R_OUT	O	Right channel audio output signal
13	DA.GND		D/A converter GND
14	REGC	I	The outside putting capacitor connection pin for SCF regulator
15	DA.GND		D/A converter GND
16	L_OUT	O	Left channel audio output signal
17	DA.VDD		Positive power supply terminal to D/A converter
18	R+	O	Right channel audio data output
19	R-	O	Right channel audio data output
20	L-	O	Left channel audio data output
21	L+	O	Left channel audio data output
22	X.VDD		Positive power supply terminal to crystal oscillation circuit
23	XTAL	I	Crystal oscillator connect pin
24	$\overline{XTAL}$	O	Crystal oscillator connect pin
25	X.GND		Crystal oscillation circuit GND
26	D.VDD		Positive power supply terminal to logic circuit
27	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
28	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
29	DIN	I	Serial data input to internal DAC
30	DOUT	O	Serial audio data output
31	SCKIN	I	Serial clock input to internal DAC
32	SCKO	O	Audio data that is output from DOUT changes at rising edge of this clock
33	LRCKIN	I	LRCK signal input to internal DAC
34	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT
35	HOLD	O	Defect detection output
36	TX	O	Digital audio interface data output
37	D.GND		Logic circuit GND
38	C16M	O	Oscillator clock buffering output
39	LIMIT	I	Status of the pin is output at Bit 5 of the status output
40	D.VDD		Positive power supply terminal to logic circuit
41	LOCK	O	EFM synchronous detection signal
42	RFCK	O	Frame synchronous signal of XTAL-system
43	MIRR	O	MIRR output
44	PLCK	O	Monitor pin of bit clock
45	D.GND		Logic circuit GND
46	C1D1	O	Output pin for indicating the C1 error correction results
47	C1D2	O	Output pin for indicating the C1 error correction results
48	C2D1	O	Output pin for indicating the C2 error correction results
49	C2D2	O	Output pin for indicating the C2 error correction results
50	C2D3	O	Output pin for indicating the C2 error correction results
51	D.VDD		Positive power supply terminal to logic circuit
52	PACK	O	CD-TEXT PACK synchronous signal
53	TSO	O	CD-TEXT data serial output
54	TSI	I	CD-TEXT control parameter serial input
55	$\overline{TSCK}$	I	CD-TEXT serial clock input
56	TSTB	I	CD-TEXT parameter strobe signal input
57	D.GND		Logic circuit GND

Pin No.	Pin Name	I/O	Function and Operation
58	TEST0	I	Test pin
59	TEST1	I	Test pin
60	ATEST	O	Test pin
61	A.GND		Analog circuit GND
62	FD	O	Focus drive output
63	TD	O	Tracking drive output
64	SD	O	Sled drive output
65	MD	O	Spindle drive output
66	DAC0	O	DAC output for adjustment
67	DAC1	O	DAC output for adjustment
68	DAC2	O	DAC output for adjustment
69	DAC3	O	DAC output for adjustment
70	A.VDD		Positive power supply terminal to analog circuit
71	EFM	O	EFM signal output
72	ASY	I	EFM comparator reference voltage input
73	C3T		3T detection capacitor additional pin
74	RFI	I	RF signal input for EFM data regulation
75	AGCO	O	RF signal output of after gain adjustment
76	AGCI	I	RF-AGC amplifier input
77	RFO	O	RF summing amplifier output
78	EQ2		RF amplifier equalizer parts additional pin
79	EQ1		RF amplifier equalizer parts additional pin
80	RF-	I	RF summing amplifier inverted input
81	A.GND		Analog circuit GND
82	A	I	Photo detector A input
83	C	I	Photo detector C input
84	B	I	Photo detector B input
85	D	I	Photo detector D input
86	F	I	Photo detector F input
87	E	I	Photo detector E input
88	A.VDD		Positive power supply terminal to analog circuit
89	REFOUT	O	Reference electric potential output
90	FE-	I	Focus error amplifier inverted input
91	FEO	O	Focus error amplifier output
92	TE-	I	Tracking error amplifier inverted input
93	TEO	O	Tracking error amplifier output
94	TE2	O	Tracking error output of after amplification
95	TEC	I	Tracking comparator input
96	A.GND		Analog circuit GND
97	PD	I	PD detection signal input for LD output monitor
98	LD	O	LD control current output
99	PN	I	APC circuit control polarity set pin
100	A.VDD		Positive power supply terminal to analog circuit

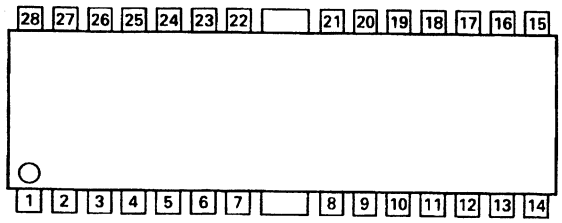
*UPD63711GC



● **Pin Functions (BA5985FM)**

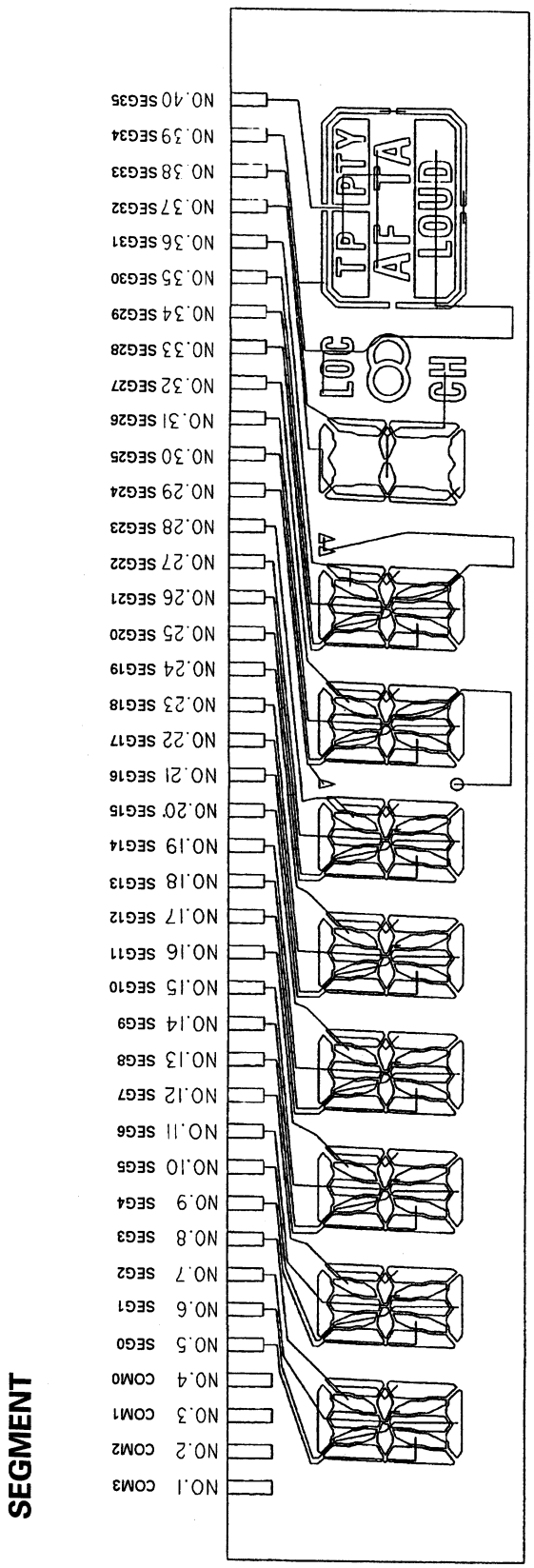
Pin No.	Pin Name	I/O	Function and Operation
1	FWD	I	Loading driver FWD input
2	OPIN1(+)	I	CH1 pre-amplifier input
3	OPIN1(–)	I	CH1 pre-amplifier inverted input
4	OPOUT1	O	CH1 pre-amplifier output
5	OPIN2(+)	I	CH2 pre-amplifier input
6	OPIN2(–)	I	CH2 pre-amplifier inverted input
7	OPOUT2	O	CH2 pre-amplifier output
8	VCC		Power supply
9	VOL(–)	O	Loading driver negative output
10	VOL(+)	O	Loading driver positive output
11	VO2(–)	O	Driver CH2 negative output
12	VO2(+)	O	Driver CH2 positive output
13	VO1(–)	O	Driver CH1 negative output
14	VO1(+)	O	Driver CH1 positive output
15	VO4(+)	O	Driver CH4 positive output
16	VO4(–)	O	Driver CH4 negative output
17	VO3(+)	O	Driver CH3 positive output
18	VO3(–)	O	Driver CH3 negative output
19	GND		GND
20	BIAS	I	Bias input
21	MUTE		Mute control
22	OPOUT3	O	CH3 pre-amplifier output
23	OPIN3(–)	I	CH3 pre-amplifier inverted input
24	OPIN3(+)	I	CH3 pre-amplifier input
25	OPOUT4	O	CH4 pre-amplifier output
26	OPIN4(–)	I	CH4 pre-amplifier inverted input
27	OPIN4(+)	I	CH4 pre-amplifier input
28	REV	I	Loading driver REV input

BA5985FM

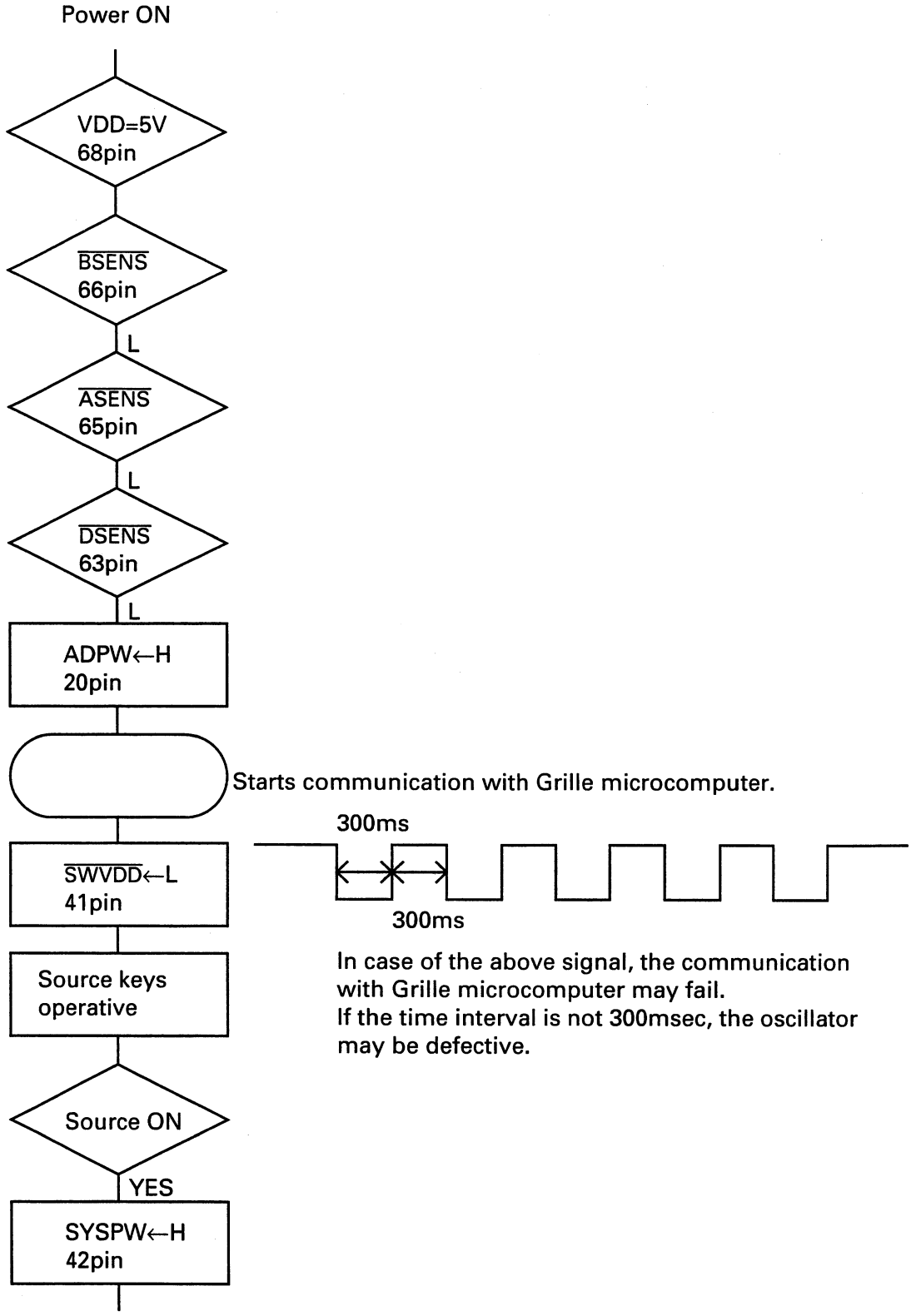


7.2.2 DISPLAY

● **CAW1559**

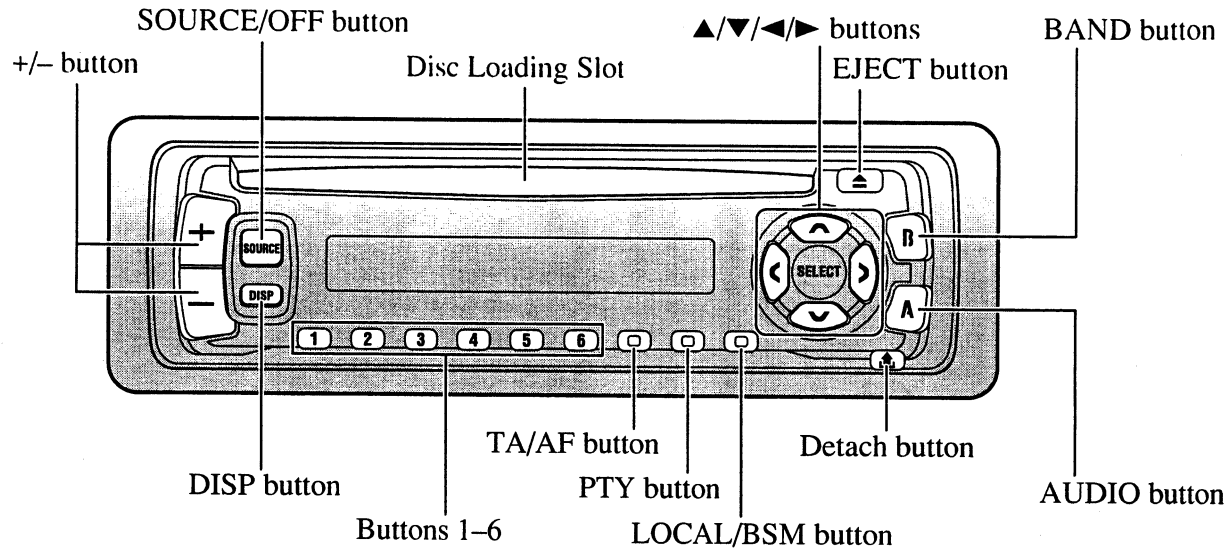


7.3 OPERATIONAL FLOW CHART



8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS

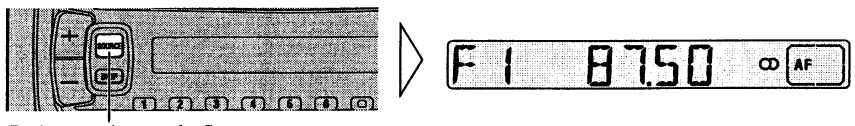


To Listen to Music

The following explains the initial operations required before you can listen to music.

Note:
- Loading a disc in this product.

1. Select the desired source (e.g. Tuner).

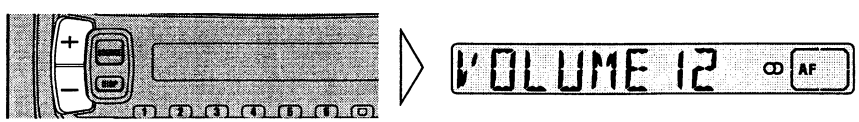


Each press changes the Source ...

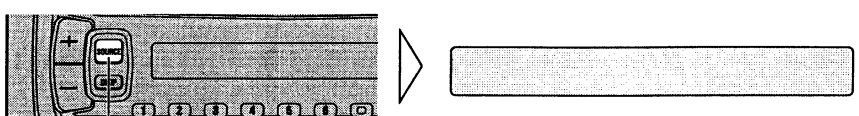
Each press of the SOURCE/OFF button selects the desired source in the following order:
Built-in CD player → Tuner

Note:
- When no disc is set in this product, built-in CD player source will not change.
- When this product's blue/white lead is connected to the car's Auto-antenna relay control terminal, the car's Auto-antenna extends when this product's source is switched ON. To retract the antenna, switch the source OFF.

2. Raise or lower the volume.



3. Turn the source OFF.



Hold for 1 second

Basic Operation of Tuner

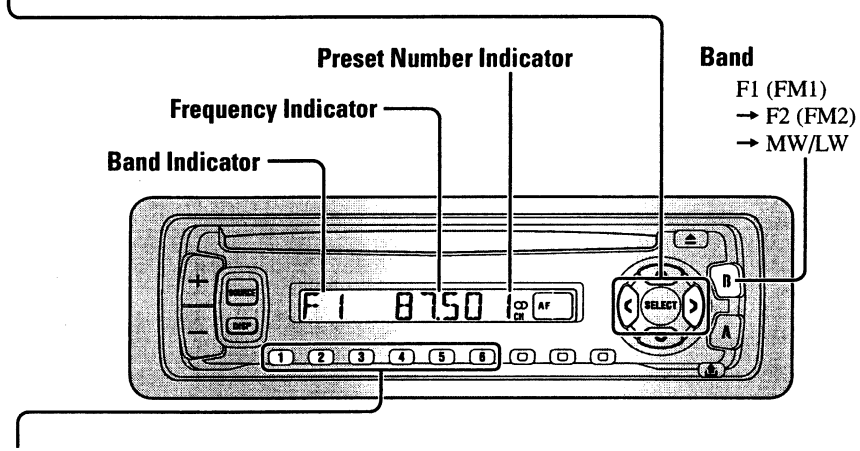
This product's AF function can be switched ON and OFF. AF should be switched OFF for normal tuning operations.

Manual and Seek Tuning

- **You can select the tuning method by changing the length of time you press the ◄/► button.**

Manual Tuning (step by step)	0.5 seconds or less
Seek Tuning	0.5 seconds or more

Note:
- If you continue pressing the button for longer than 0.5 seconds, you can skip broadcast stations. Seek Tuning starts as soon as you release the button.
- Stereo indicator "◌" lights when a stereo station is selected.



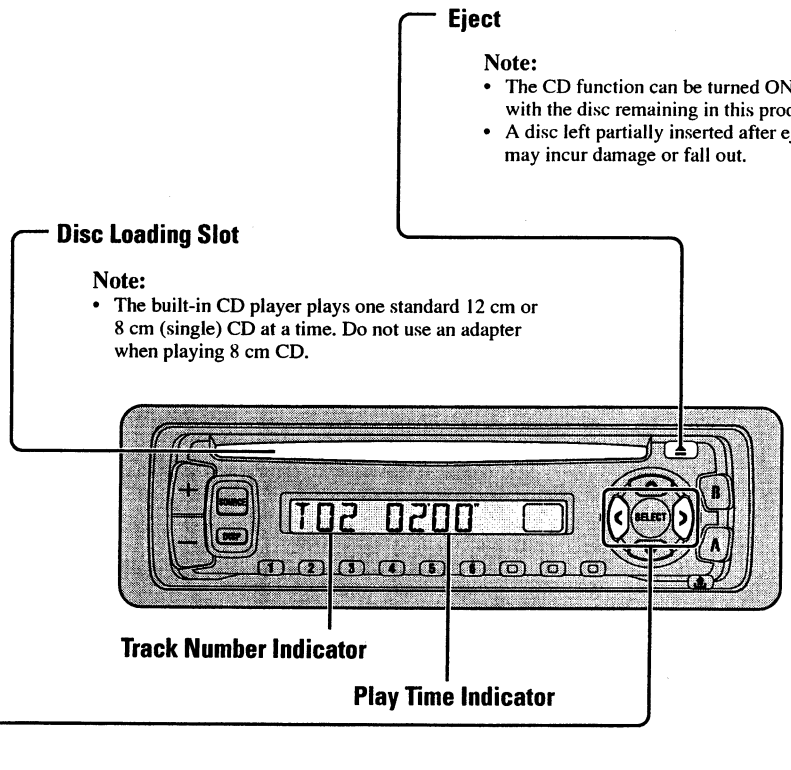
Preset Tuning

- **You can memorize broadcast stations in buttons 1 through 6 for easy, one-touch station recall.**

Preset station recall	2 seconds or less
Broadcast station preset memory	2 seconds or more

Note:
- Up to 12 FM stations (6 in F1 (FM1) and F2 (FM2)) and 6 MW/LW stations can be stored in memory.
- You can also use the ▲ or ▼ buttons to recall broadcast stations memorized in buttons 1 through 6.

Basic Operation of Built-in CD Player



Note:
- The CD function can be turned ON/OFF with the disc remaining in this product.
- A disc left partially inserted after ejection may incur damage or fall out.

Note:
- The built-in CD player plays one standard 12 cm or 8 cm (single) CD at a time. Do not use an adapter when playing 8 cm CD.

Track Search and Fast Forward/Reverse

- **You can select between Track Search or Fast Forward/Reverse by pressing the ◄/► button for a different length of time.**

Track Search	0.5 seconds or less
Fast Forward/Reverse	Continue pressing

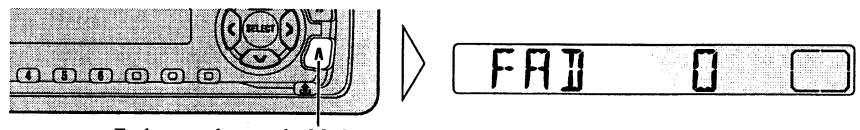
Note:
- If a disc cannot be inserted fully or playback fails, make sure the recorded side is down. Push the EJECT button and check the disc for damage before reinserting it.
- If a disc is inserted with the recorded side up, it will be ejected automatically after a few moments.
- If the built-in CD player cannot operate properly, an error message (such as "ERROR-14") appears on the display.

Entering the Audio Menu

With this Menu, you can adjust the sound quality.

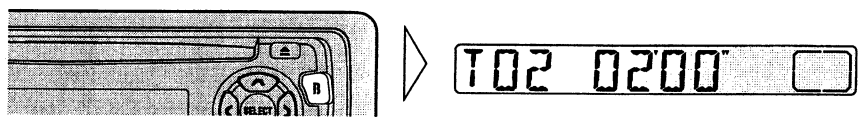
Note:
- After entering the Audio Menu, if you do not perform an operation within about 30 seconds, the Audio Menu is automatically canceled.

1. **Select the desired mode in the Audio Menu.**



Each press changes the Mode ...

2. **Operate a mode.**
3. **Cancel the Audio Menu.**



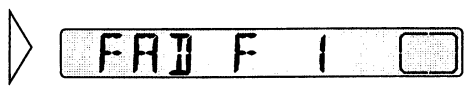
Audio Menu Functions

The Audio Menu features the following functions.

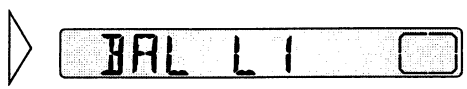
Balance Adjustment (FAD)

This function allows you to select a Fader/Balance setting that provides ideal listening conditions in all occupied seats.

1. **Press the AUDIO button and select the Fader/Balance mode (FAD) in the Audio Menu.**
2. **Adjust front/rear speaker balance with the ▲/▼ buttons.**
   "FAD F15" – "FAD R15" is displayed as it moves from front to rear.



3. **Adjust left/right speaker balance with the ◄/► buttons.**
   "BAL L9" – "BAL R9" is displayed as it moves from left to right.

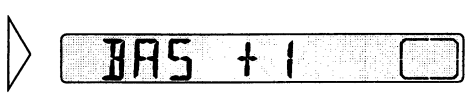


Note:
- "FAD 0" is the proper setting when 2 speakers are in use.

Bass Adjustment (BAS)

You can adjust a Bass level as desired.

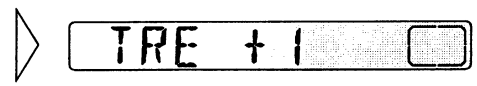
1. **Press the AUDIO button and select the Bass mode (BAS) in the Audio Menu.**
2. **Boost or attenuate the bass level with the ▲/▼ buttons.**
   The display shows "+6" – "–6".



Treble Adjustment (TRE)

You can adjust a Treble level as desired.

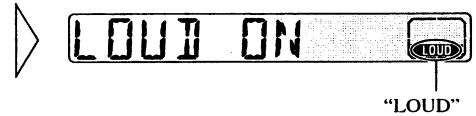
1. **Press the AUDIO button and select the Treble mode (TRE) in the Audio Menu.**
2. **Boost or attenuate the treble level with the ▲/▼ buttons.**
   The display shows "+6" – "–6".



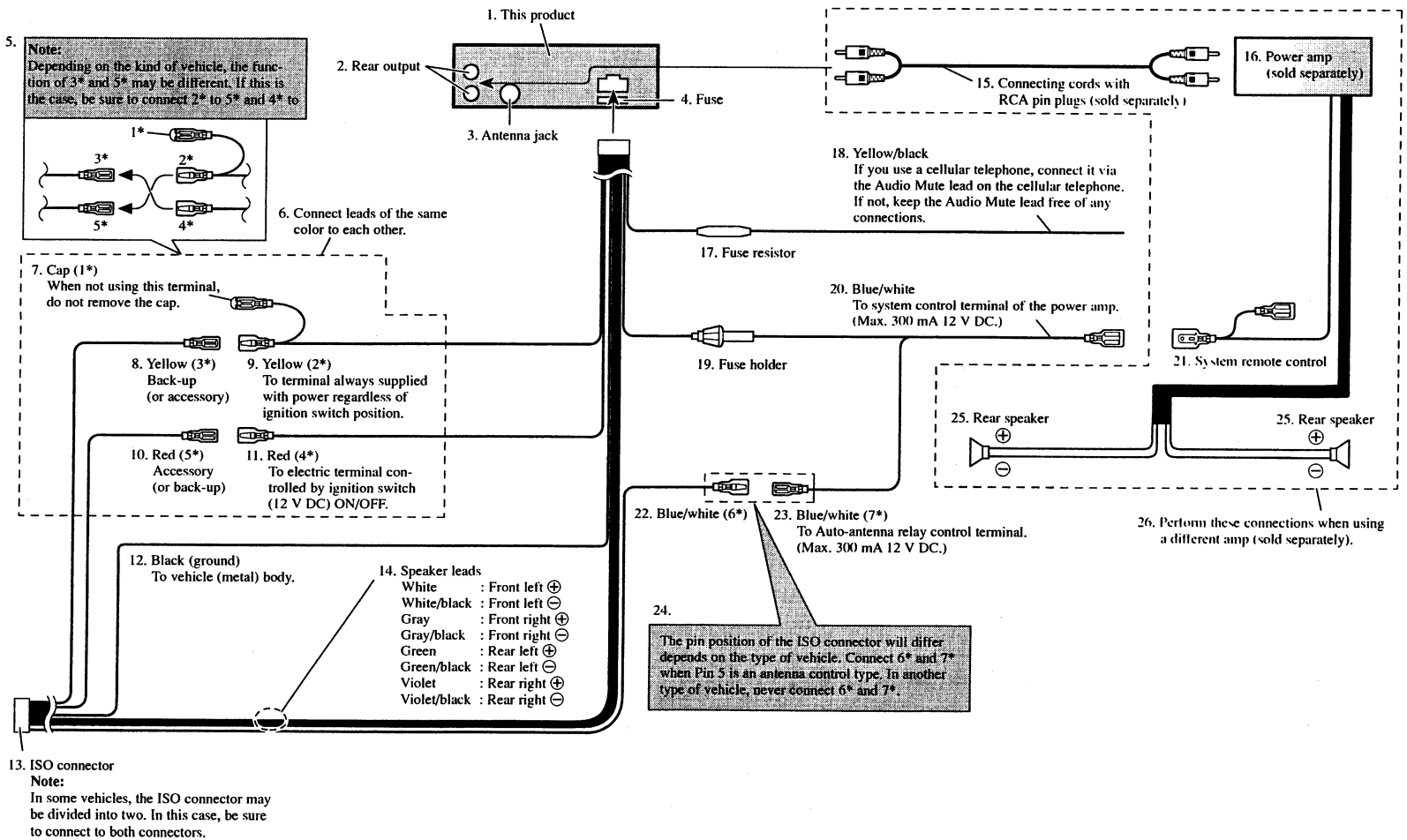
Loudness Adjustment (LOUD)

The Loudness function compensates for deficiencies in the low and high sound ranges at low volume.

1. **Press the AUDIO button and select the Loudness mode (LOUD) in the Audio Menu.**
2. **Switch the Loudness function ON/OFF with the ▲/▼ buttons.**



"LOUD"


1. This product
2. Rear output
3. Antenna jack
4. Fuse
5.
Note:
Depending on the kind of vehicle, the function of 3* and 5* may be different. If this is the case, be sure to connect 2* to 5* and 4* to
1*
2*
3*
4*
5*
6. Connect leads of the same color to each other.
7. Cap (1*)
When not using this terminal, do not remove the cap.
8. Yellow (3*)
Back-up
(or accessory)
9. Yellow (2*)
To terminal always supplied with power regardless of ignition switch position.
10. Red (5*)
Accessory
(or back-up)
11. Red (4*)
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
12. Black (ground)
To vehicle (metal) body.
13. ISO connector
Note:
In some vehicles, the ISO connector may be divided into two. In this case, be sure to connect to both connectors.
14. Speaker leads
White : Front left ⊕
White/black : Front left ⊖
Gray : Front right ⊕
Gray/black : Front right ⊖
Green : Rear left ⊕
Green/black : Rear left ⊖
Violet : Rear right ⊕
Violet/black : Rear right ⊖
15. Connecting cords with RCA pin plugs (sold separately)
16. Power amp (sold separately)
17. Fuse resistor
18. Yellow/black
If you use a cellular telephone, connect it via the Audio Mute lead on the cellular telephone. If not, keep the Audio Mute lead free of any connections.
19. Fuse holder
20. Blue/white
To system control terminal of the power amp. (Max. 300 mA 12 V DC.)
21. System remote control
22. Blue/white (6*)
23. Blue/white (7*)
To Auto-antenna relay control terminal. (Max. 300 mA 12 V DC.)
24.
The pin position of the ISO connector will differ depends on the type of vehicle. Connect 6* and 7* when Pin 5 is an antenna control type. In another type of vehicle, never connect 6* and 7*.
25. Rear speaker
25. Rear speaker
26. Perform these connections when using a different amp (sold separately).

8.2 SPECIFICATIONS

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A
Dimensions
(mounting size) ..... 178 (W) × 50 (H) × 159 (D) mm
(front face) ..... 188 (W) × 58 (H) × 19 (D) mm
Weight ..... 1.4 kg

Amplifier

Maximum power output ..... 40 W × 4
Continuous power output ..... 22 W × 4
(DIN45324, +B = 14.4 V)
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout maximum output level/output impedance
..... 2.2 V /1 kΩ
Tone controls
(Bass) ..... ±12 dB (100 Hz)
(Treble) ..... ±12 dB (10 kHz)
Loudness contour..... +10 dB (100 Hz), +7 dB (10 kHz)
(volume: –30 dB)

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Frequency characteristics..... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 94 dB (1 kHz) (IEC-A network)
Dynamic range ..... 92 dB (1 kHz)
Number of channels ..... 2 (stereo)

FM tuner

Frequency range ..... 87.5 – 108 MHz
Usable sensitivity
..... 11 dBf (1.0 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity .... 16 dBf (1.7 µV/75 Ω, mono)
Signal-to-noise ratio ..... 70 dB (IEC-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range ..... 531 – 1,602 kHz (9 kHz)
Usable sensitivity ..... 18 µV (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

LW tuner

Frequency range ..... 153 – 281 kHz
Usable sensitivity ..... 30 µV (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

Note:

- Specifications and the design are subject to possible modification without notice due to improvements.